

# THE ANT GENERA OF WEST AFRICA: A SYNONYMIC SYNOPSIS WITH KEYS (HYMENOPTERA : FORMICIDAE)

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## SYNOPSIS

Keys are given to the subfamilies and genera of ants present in West Africa. A synopsis of the known generic synonymy is presented along with diagnostic notes on the genera.

## INTRODUCTION

WEST Africa, in the sense of the present study, includes the territories of Senegal, Gambia, Portugese Guinea, Guinea, Sierra Leone, Liberia, Ivory Coast, Ghana, Togo, Dahomey, Nigeria, Upper Volta, and the southern portions of Mali and Niger (below 15° N.).

Two distinct types of vegetation occur in the above states, forest and savannah. The forest zone forms a belt of varying width running parallel to the coast, sometimes coming very close to the sea but often separated from the ocean by a coastal plain. The forest zone is not represented in the inland states of Upper Volta, Mali and Niger. North of the forest zone is the inland savannah belt which grades into the Sahara Desert. In places, such as the Dahomey forest gap, the savannah reaches to the coast and the ant fauna of the coastal plains bears a greater resemblance to the savannah than to the forest population.

As defined above, West Africa is bounded on the west and south by the Atlantic Ocean, on the north by the steppe region which grades into the Sahara Desert, and on the east by the mountain ranges of Cameroun.

The majority of ant genera in West Africa contain species in both the forest and savannah zones, but some genera are confined to the forest (e.g. *Psalidomyrex* E. André) whilst others are restricted to the savannah and the coastal plains (e.g. *Messor* Forel, *Cataglyphis* Förster).

Wheeler (1922) included keys to the world genera of ants and a check list of the ants of the Ethiopian Region in the monumental 'Ants of the Belgian Congo'. These keys are now considerably outdated due to revisions, synonymies and descriptions of new genera carried out since the publications of this study, and are now unworkable in many places.

The first section of the present paper gives keys to the subfamilies and genera of ants recognized at present from West Africa, and includes some pantropical tramp ants such as *Trichoscapa* Emery, which have not yet been reported but can be expected to be found in the region. In the second section the genera are arranged under their appropriate subfamilial and tribal groupings, and the known synonyms up to the time of writing are included, as are short diagnostic notes on the genera. An indication of nesting sites and habits are given where these are known.

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#### DEFINITIONS OF SOME CHARACTERS USED IN THE KEYS

(See also Text-fig. 1)

*Acidopore*: a circular or subcircular orifice formed by the apex of the hypopygium in the subfamily Formicinae, the orifice of the acid-producing glands. Usually the acidopore is visible at the apex of the gaster, sometimes borne on a conical projection of the hypopygium but occasionally concealed by the pygidium when not in use. (Hung & Brown, 1966).

*Alitrunk* (= *mesosoma*): the thorax proper plus the propodeum (first true abdominal segment) to which it is fused in the higher Hymenoptera. The 'thorax' of older authors.

*Antennal Scrobe*: a longitudinal depression in the side of the head, either above or below the eye, which can accommodate the scape or the whole of the antenna.

*Frontal Carinae*: a pair of longitudinal ridges situated mediodorsally on the head behind the clypeus. Usually the frontal carinae are expanded laterally into lobes which cover the antennal insertions.

*Funiculus* (= *flagellum*): collective term for all the antennal segments distal to the elongated first segment or scape.

- Gaster*: the four or five visible remaining abdominal segments situated behind the separated pedicellar segments, and forming the apparent 'abdomen'.
- Hypopygium*: the last visible gastral sternite (bearing the acidopore in the subfamily Formicinae). In reality the sternite of the seventh abdominal segment.
- Palp Formula*: the number of segments in the maxillary and labial palpi, always expressed in the order maxillary, labial. (e.g. palp formula 6,4.)
- Pedicel*: the one or two separated abdominal segments between the alitrunk (apparent thorax) and gaster (apparent abdomen). The first segment is termed the *petiole*, the second when present the *postpetiole*. In reality the second and third (when present) true abdominal segments.
- Petiole and Postpetiole*: see *Pedicel*, above.
- Propodeum* (= *epinotum*): the first true abdominal segment, fused to the thorax proper to form the *alitrunk*.
- Psammore*: a basket-like arrangement of long setae found on the gular surface of the head in deserticolous ants and used to transport grains of soil.
- Pygidium*: the last visible gastral tergite. In reality the tergite of the seventh true abdominal segment.
- Scape*: the elongate first segment of the antenna.

KEYS TO THE SUBFAMILIES OF FORMICIDAE IN WEST AFRICA  
(based on worker caste)

- 1 Pedicel of a single segment, usually with a narrow connection to the gaster so that the petiole has a distinct posterior face. Rarely the petiole is reduced or very broadly attached to the gaster . . . . . 2
- Pedicel of two segments, usually with the postpetiole distinctly separated from the gaster. Rarely the postpetiole is broadly attached to the gaster, but in this case the antennae are only 6-segmented . . . . . 6
- 2 Eyes absent. Clypeus reduced so that the antennal insertions are very close to the anterior margin of the head. Frontal carinae raised, leaving the condylar bulbs of the antennae visible in dorsal view. Pygidium impressed, armed with a spine or tooth at each side posteriorly. Promesonotal suture distinct, mobile. Lateral alitrunk in large and medium workers with a distinct, deep longitudinal impression below the propodeal spiracle. Sting reduced, non-functional. Polymorphic. (Driver Ants) . . . . . **DORYLINAE** (p. 328)
- Without all the above characters. Eyes usually present; clypeus developed so that the antennal insertions are some distance behind the anterior margin of the head. Frontal carinae usually at least partially cover antennal insertions; if not, then the dorsum of the alitrunk is without sutures. Pygidium rarely impressed; alitrunk laterally without a deep impression below the propodeal spiracle . . . . . 3
- 3 Sting well developed, functional. (Usually visible in alcohol-killed or mounted specimens) . . . . . 4
- Sting vestigial or absent, never visible . . . . . 5
- 4 Pygidium impressed, armed laterally or posteriorly with a row of short denticles or spines (which may be difficult to see due to setal development). Genae carinate. Frontal carinae fail to cover condylar bulbs of antennae. Alitrunk dorsally completely devoid of sutures, or sutures represented by weak impressions at most . . . . . **CERAPACHYINAE** (p. 325)
- Pygidium never impressed, never armed with spines or denticles. Genae usually not carinate; frontal carinae usually cover condylar bulbs of antennae. Alitrunk

- dorsally usually with at least one suture; if sutures absent, then the second gastral segment is strongly vaulted . . . . . **PONERINAE** (p. 323)
- 5 Apex of gaster with a circular acidopore formed from the hypopygium, this structure often projecting as a nozzle and fringed with setae. Occasionally the orifice of the acidopore is hidden by a projection of the pygidium, in which case the pronotum, petiole or both armed with spines. Petiole usually a scale or node, rarely reduced . . . . . **FORMICINAE** (p. 329)
- Acidopore absent, the gaster terminating in a transverse slit bounded by the pygidium and hypopygium. Petiole usually reduced and overhung by the first gastral segment, rendering the petiole invisible in dorsal views. . . . . **DOLICHODERINAE** (p. 329)
- 6 Pygidium impressed and armed laterally or posteriorly with a row of short spines or denticles (which may be difficult to see due to setal development) . . . . . **CERAPACHYINAE** (p. 325)
- Pygidium not impressed, not armed with teeth or denticles. . . . . 7
- 7 Frontal carinae vertical, failing to cover the antennal insertions; eyes absent . . . . . 8
- Frontal carinae not vertical, totally or partially covering the antennal insertions; eyes usually present . . . . . 9
- 8 Antennae 10-segmented; genae carinate. Larger ants with head width greater than 0.25 mm . . . . . **DORYLINAE** (p. 328)
- Antennae 12-segmented; genae not carinate. Minute ants with head width less than 0.25 mm . . . . . **LEPTANILLINAE** (p. 328)

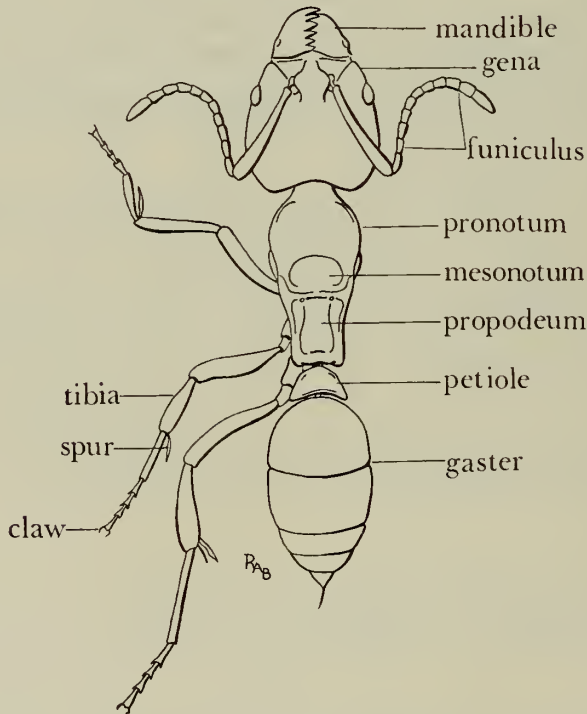


FIG. 1. Worker of *Brachyponera senaarensis* (Mayr), to illustrate some terms used in the key.

- 9 Clypeus projecting back between the frontal carinae. Tibial spurs of middle and hind legs usually simple or absent; if pectinate a psammophore is present on the gular surface of the head. Antennae 4- to 12-segmented. Eyes usually medium to small in size, ocelli absent. Claws simple . . . . . **MYRMICINAE** (p. 325)
- Clypeus not projecting back between frontal carinae. Tibial spurs of middle and hind legs pectinate. Psammophore absent. Antennae always 12-segmented. Eyes usually large, ocelli often present. Claws usually toothed . . . . . **PSEUDOMYRMECINAE** (p. 329)

KEYS TO THE GENERA  
(based on worker caste)  
Subfamily PONERINAE

- 1 Petiole broadly attached to first gastral segment, without a free posterior face. Mandibles elongate and narrow, dentate down the entire inner margin . . . . . 2
- Petiolar-gastral junction narrow, petiole usually with a distinct free posterior face. Mandibles not as above; if elongate they are either not dentate down the entire inner margin or are not narrow . . . . . 3
- 2 Mandibles pointed at apex, not as long as head; tooth row on inner margin single. Sculpture fine, spatulate hairs absent . . . . . **AMBLYOPONE** Erichson (p. 330)
- Mandibles blunt at apex, very long (longer than head), with a double tooth-row on the inner margin. Sculpture coarse, spatulate hairs present . . . . . **MYSTRIMUM** Roger (p. 331)
- 3 Tergite of second gastral segment strongly vaulted so that the remaining segments point anteriorly. Alitrunk devoid of sutures . . . . . 4
- Tergite of second gastral segment not strongly vaulted, remaining segments directed posteriorly. Alitrunk usually with at least one suture visible dorsally . . . . . 5
- 4 Mandibles edentate, overhung by the projecting clypeus. Apical funicular segment bulbous . . . . . **DISCOTHYREA** Roger (p. 332)
- Mandibles with three teeth, not overhung by clypeus. Apical funicular segment only moderately enlarged . . . . . **PROCERATIUM** Roger (p. 333)
- 5 Mandibles linear, inserted in the middle of the anterior margin of the head, with an apical armament of three teeth arranged in a vertical series . . . . . 6
- Mandibles inserted at sides of anterior margin of head, not armed apically with a vertical series of three teeth . . . . . 7
- 6 Dorsalmost tooth of apical mandibular series acute . . . . . **ANOCHECUS** Mayr (p. 333)
- Dorsalmost tooth of apical mandibular series truncated. . . . . **ODONTOMACHUS** Latreille (p. 333)
- 7 Claws pectinate (incompletely so in some species).  
Clypeus carinate, projecting as a lobe or point antero-medially. Mandibles inserted at extreme corners of anterior margin of head, either edentate or nearly so . . . . . **LEPTOGENYS** Roger (p. 337)
- Claws simple or with a tooth, never pectinate . . . . . 8
- 8 Middle tibiae and tarsi with abundant downcurved spines and stiff hairs on the outer surface, giving a brush-like appearance. Tibial spurs of middle legs both small and simple, hind tibiae with a large pectinate and a small simple spur. Eyes absent . . . . . **CENTROMYRMEX** Mayr (p. 335)
- Middle tibiae and tarsi not as above. Tibial spurs of middle and hind legs similarly developed. Eyes usually present . . . . . 9
- 9 Mandibles elongate, linear, somewhat curved . . . . . 10
- Mandibles triangular or subtriangular . . . . . 12
- 10 Mandibles blunt and edentate apically, the inner margin with not more than two blunt teeth. Mandibular articulation associated with a marked semicircular excavation of the dorsal anterior margin of the head in front of the eye . . . . . 11

- Mandibles dentate apically, their inner margins retaining feeble traces of teeth.  
Mandibular articulation not associated with a semicircular excavation of the anterior margin of the head . . . . . **PROMYOPIAS** Santschi (p. 339)
- 11 Mandibles with distal half swollen, the inner margin without teeth  
**CACOPONE** Santschi (p. 335)
  - Mandibles with distal half tapering, not swollen; inner margin with one or two blunt teeth . . . . . **PLECTROCTENA** F. Smith (p. 339)
- 12 Clypeus fused to frontal carinae and forming a plate which projects forwards above the mandibles. Antennae inserted close to the anterior margin of this plate, their condylar bulbs exposed . . . . . **PROBOLOMYRMEX** Mayr (p. 332)
  - Clypeus and frontal carinae not modified as above; condylar bulbs of antennae covered by frontal carinae . . . . . 13
- 13 Gaster without a constriction between the first and second segments . . . . . 14
  - Gaster with a constriction between the first and second segments. . . . . 15
- 14 Petiole armed with a comb of five teeth which recurve over the gaster  
**PHRYNOPONERA** Wheeler (p. 338)
  - Petiole a narrow, unarmed, erect scale . . . . . **ASPHINCTOPONE** Santschi (p. 334)
- 15 Pretarsal claws armed with a tooth either medially or near base . . . . . 16
  - Pretarsal claws simple, without teeth . . . . . 18
- 16 Gena with a carina running longitudinally between the eye and the mandibular articulation. Claws toothed near the base . . . . . **MEGAPONERA** Mayr (p. 337)
  - Gena not carinate. Claws with a median tooth. . . . . 17
- 17 Tibiae of middle and hind legs each with two pectinate spurs. Sculpture of fine dense shagreening with associated larger punctures. Median portion of clypeus not raised nor projecting anteriorly as a lobe . . . . . **PLATYTHYREA** Roger (p. 331)
  - Tibiae of middle and hind legs each with one large pectinate and one small simple spur. Sculpture not as above. Median portion of clypeus abruptly raised and projecting forwards as a truncated lobe . . . . . **PALTOHYREUS** Mayr (p. 338)
- 18 Middle and hind tibiae each with a single pectinate spur . . . . . 19
  - Middle and hind tibiae each with two spurs, one large and pectinate, the other small and simple . . . . . 21
- 19 Basal portion of mandible with a distinct pit or fovea dorsolaterally  
**CRYPTOPONE** Emery (p. 336)
  - Basal portion of mandible without a dorsolateral pit or fovea . . . . . 20
- 20 Larger ants, total length greater than 7 mm. Mandibles elongate-falcate, their apical margins edentate or crenulate, the apex prolonged so that the tips cross over at rest . . . . . **PSALIDOMYRMEX** E. André (p. 339)
  - Smaller ants, total length less than 5 mm. Mandibles triangular with 3-4 enlarged teeth apically, usually followed by a row of denticles. Apical margins meet evenly when mandibles at rest . . . . . **HYPOPONERA** Santschi (p. 336)
- 21 Petiole thick, nodiform. Metanotal suture obsolete or absent, not impressed. Propodeum not or only slightly narrower than pronotum in dorsal view  
**BOTHROPONERA** Mayr (p. 334)
  - Petiole a thick scale. Metanotal suture present, usually distinct and impressed. Propodeum narrower than pronotum in dorsal view . . . . . 22
- 22 Basal portion of mandible with a dorsolateral pit or fovea . . . . . 23
  - Basal portion of mandible without a dorsolateral pit or fovea  
**MESOPONERA** Emery (p. 338)
- 23 Palp formula 3,3. Eyes larger, their maximum diameter greater than the greatest width of the scape. Metanotal suture very deeply impressed  
**BRACHYPONERA** Emery (p. 335)
  - Palp formula 4,4. Eyes smaller, their maximum diameter less than the greatest width of the scape. Metanotal suture very weakly impressed  
**TRACHYMESOPUS** Emery (p. 340)

## Subfamily CERAPACHYINAE

- 1 Eyes absent. Gastral segments separated from each other by distinct constrictions  
*SPHINCTOMYRMEX* Mayr (p. 341)
- Eyes present, varying from large to minute. Gaster constricted only between first and second segments, sometimes very deeply so, so that the pedicel is to all intents and purposes two-segmented . . . . . 2
- 2 Tibial spurs absent from middle legs. Claws toothed. Antennal scapes much compressed dorsoventrally, more or less triangular in dorsal view  
*SIMPONE* Forel (p. 341)
- 3 Tibial spurs present on middle legs. Claws simple. Antennal scapes not or only slightly compressed, not triangular in dorsal view . . . . . 3
- Apical segment of funiculus strongly swollen, forming a one-jointed club. Petiole not marginate laterally, never armed with teeth posterodorsally  
*CERAPACHYS* F. Smith (p. 340)
- Apical three funicular segments swollen, forming a weak club. Petiole sharply marginate laterally, often with a pair of teeth situated posterodorsally  
*PHYRACACES* Emery (p. 340)

## Subfamily MYRMICINAE

- 1 Antennae with 4 segments . . . . . 2
- Antennae with 6 segments . . . . . 4
- Antennae with 7 segments . . . . . *MYRMICHRIA* Saunders (p. 349)
- Antennae with 9 segments . . . . . 11
- Antennae with 10 segments . . . . . 14
- Antennae with 11 segments . . . . . 17
- Antennae with 12 segments . . . . . 26
- 2 Mandibles short, subtriangular, serially dentate. Clypeus projecting anteriorly and overhanging mandibles for most of their length. Head without specialized orbicular hairs . . . . . *MICCOSTRUMA* Brown (p. 343)
- Mandibles elongate, linear, not serially dentate. Clypeus not projecting anteriorly over the mandibles. Head with numerous specialized orbicular hairs . . . . . 3
- 3 Apex of each mandibular blade with a fork of two spiniform teeth. Labrum not produced between mandibles as a biconical structure  
*QUADRISTRUMA* Brown (p. 344)
- Apex of each mandible with a vertical series of denticulae. Labrum produced between mandibles as a biconical structure . . . . . *EPITRITUS* Emery (p. 343)
- 4 Mandibles long and linear, with not more than 4 teeth on the inner margin of each blade . . . . . 5
- Mandibles short, triangular or subtriangular, serially dentate or denticulate . . . . . 7
- 5 Mandibles with an apical fork of 2–3 teeth, which may have one or more intercalary denticulae. Head without orbicular hairs . . . . . 6
- Mandibles without apical fork; either with a single long tooth at the dorsal apex subtended by a series of denticulae or with a series of denticulae only. Head with orbicular hairs present . . . . . *EPITRITUS* Emery (p. 343)
- 6 Antennal scrobes absent. Mandibular blades without preapical teeth. Occipital lobes of head, promesonotum, propodeum and petiole armed with teeth or short spines . . . . . *MICRODACETON* Santschi (p. 344)
- Antennal scrobes present above the eyes. Mandibular blades with one or two preapical teeth or denticles. Propodeum only armed with spines  
*STRUMIGENYS* F. Smith (p. 345)
- 7 Antennal scrobes absent. Propodeum unarmed, smoothly rounded. First (basal) tarsal segment on each leg swollen, as broad as tibiae  
*MELISSOTARSUS* Emery (p. 347)

- Antennal scrobes present above the eyes. Propodeum armed with a pair of spines or teeth. First tarsal segment on each leg slender . . . . . 8
- 8 Apical border of mandible with more than 20 denticulae, the basal 4 to 8 of which may be considerably larger than those preceding. **SERRASTRUMA** Brown (p. 344)
- Apical border of mandible with less than 10 teeth of variable size . . . . . 9
- 9 Head elongate, always with numerous setae . . . . . 10
- Head not elongate, setae reduced to 2 or 3 on posterior dorsum  
**TRICHOSCAPA** Emery (p. 345)
- 10 Clypeal hairs bizarre, either flattened, clavate or spoon-shaped  
**SMITHISTRUMA** Brown (p. 345)
- Clypeal hairs not bizarre, usually short and simple. **CODIOMYRMEX** Wheeler (p. 343)
- 11 Antennal scrobes present above the eyes; antennal club of three segments. Promesonotum produced into a shelf posteriorly, dentate or spinose behind and overhanging the propodeum, which is vertical or nearly so. Entire body densely clothed with fine hairs . . . . . **MERANOPLUS** F. Smith (p. 348)
- Antennal scrobes absent; antennal club of two segments. Promesonotum not produced posteriorly, propodeum not vertical. Hairs sparse . . . . . 12
- 12 Propodeum armed with a pair of spines or teeth or sharply angled. Worker caste dimorphic, without intermediate forms . . . . . **OLIGOMYRMEX** Mayr (p. 352)
- Propodeum unarmed. Worker caste monomorphic . . . . . 13
- 13 Eyes completely absent; mandibles armed with 5-6 teeth. Promesonotum not marginate laterally . . . . . **CAREBARA** Westwood (p. 351)
- Eyes present, small, of 2 ommatidia only; mandibles with 4 teeth. Promesonotum distinctly marginate laterally . . . . . **PAEDALGUS** Forel (p. 353)
- 14 Petiole without a node. Postpetiole attached to dorsum of first gastral segment, the gaster itself more or less heart-shaped in dorsal view and capable of reflexion over the alitrunk . . . . . **CREMATOGASTER** Lund (p. 342)
- Petiole with a node. Postpetiole not attached to dorsum of first gastral segment; gaster not heart-shaped nor capable of reflexion over alitrunk . . . . . 15
- 15 Antennal scrobes present above the eyes; antennal club 3-segmented. Clypeus not longitudinally bicarinate. Sting with a triangular lamella projecting apico-dorsally . . . . . **DECAMORIUM** Forel (p. 355)
- Antennal scrobes absent; antennal club 2-segmented. Clypeus longitudinally bicarinate. Sting without triangular lamelliform appendage . . . . . 16
- 16 Propodeum smoothly rounded, neither sharply angulate nor dentate. Maxillary palpi geniculate. Mono- or polymorphic . . . . . **SOLENOPSIS** Westwood (p. 354)
- Propodeum sharply angled or armed with a pair of spines or teeth. Maxillary palpi not geniculate. Dimorphic without intermediates.  
**OLIGOMYRMEX** Mayr (p. 352)
- 17 Postpetiole attached to dorsum of first gastral segment. Gaster more or less heart-shaped and capable of reflexion over the alitrunk.  
**CREMATOGASTER** Lund (p. 342)
- Postpetiole not attached to dorsum of first gastral segment. Gaster not heart-shaped nor capable of reflexion over the alitrunk . . . . . 18
- 18 Antennal scrobes present, either above or below the eyes . . . . . 19
- Antennal scrobes absent . . . . . 23
- 19 Antennal scrobes below the eyes. Head, alitrunk and gaster dorsoventrally flattened, and often armed with spines or teeth along the sides of the head and alitrunk. First tergite forming the whole dorsal surface of the gaster when viewed from above . . . . . **CATAULACUS** F. Smith (p. 342)
- Antennal scrobes above eyes. Head, alitrunk and gaster not dorsoventrally flattened. More than one gastral tergite visible in dorsal view. . . . . 20
- 20 Antennal scrobes weak, bordered laterally by a longitudinal genal carina. Minute ants, 2 mm or less in total length . . . . . **WASMANNIA** F. Smith (p. 350)



- Antennal scrobes more definitely marked, not bordered by lateral genal carinae.  
Larger, total length more than 2 mm . . . . . 21
- 21 Median portion of clypeus vertical, with a distinct anteriorly projecting bilobed  
appendage dorsally; lateral portions of clypeus entire, not reduced to a narrow  
strip nor raised into a ridge in front of the antennal insertions. Head and body  
usually with some spatulate or otherwise bizarre hairs  
*CALYPTOMYRMEX* Emery (p. 347)
- Median portion of clypeus not vertical, without a bilobed appendage dorsally.  
Lateral portions of clypeus in front of antennal insertions reduced to a narrow  
strip or raised into a ridge. Head and body without spatulate or otherwise  
bizarre hairs . . . . . 22
- 22 Sting with a spatulate lamella apically. Anterior margin of median portion of  
clypeus without projections. Pronotum always unarmed; petiole sometimes  
squamiform . . . . . *XIPHOMYRMEX* Forel (p. 356)
- Sting acute, not ending in a spatulate lamella apically. Anterior margin of median  
portion of clypeus with a number of low, blunt, dentiform projections. Pronotum  
armed above with a pair of spines or a pair of low blunt tubercles; petiole never  
squamiform . . . . . *PRISTOMYRMEX* Mayr (p. 348)
- 23 Antennal club of 2 segments. Propodeum armed with a pair of spines or teeth . . . . . 24
- Antennal club of 3 segments. Propodeum smoothly rounded, unarmed . . . . . 25
- 24 Clypeus bicarinate. Dimorphic, without intermediates  
*OLIGOMYRMEX* Mayr (p. 352)
- Clypeus not bicarinate. Polymorphic, with a graded series of intermediates  
connecting minor to major workers . . . . . *PHEIDOLOGETON* Mayr (p. 353)
- 25 Median portion of clypeus distinctly longitudinally bicarinate  
*MONOMORIUM* Mayr (p. 351)
- Median portion of clypeus somewhat swollen but not bicarinate  
*DIPLOMORIUM* Mayr (p. 351)
- 26 Petiole armed with a pair of spines or teeth above . . . . . 27
- Petiole unarmed or merely emarginate above . . . . . 28
- 27 Mesonotum bituberculate; propodeum armed with a pair of long spines  
*ATOPOMYRMEX* E. André (p. 348)
- Mesonotum not bituberculate; propodeum unarmed . . . . . *TERATANER* Emery (p. 349)
- 28 Spurs on middle and hind tibiae pectinate . . . . . *CRATOMYRMEX* Emery (p. 349)
- Spurs on middle and hind tibiae simple or absent . . . . . 29
- 29 Antennal club of 2 segments, the apical segment greatly enlarged. Clypeus  
produced into a lobe anteriorly. Basal internal margin of each mandible with a  
tooth . . . . . *ADELOMYRMEX* Emery (p. 346)
- Antennal club of 3 or 4 segments, or absent. Basal internal margin of each mandible  
without a tooth . . . . . 30
- 30 Lateral portions of clypeus with their posterior margins raised into a ridge in front  
of the antennal insertions. Sting with a lamelliform triangular appendage  
apicodorsally.  
Propodeum usually bispinose and with a pair of metapleural lobes or teeth  
below the propodeal spines . . . . . 31
- Lateral portions of clypeus not raised into a ridge in front of the antennal insertions.  
Sting without a lamelliform appendage apicodorsally . . . . . 33
- 31 Head and body with trifid or multifid setae, usually abundant. (In most cases the  
trifid setae are best observed at mag.  $\times 80$  or above by viewing the alitrunk and  
pedicel in profile.) Antennal scrobes usually present, deep, divided into upper  
and lower compartments by a median longitudinal ridge which is incomplete  
posteriorly . . . . . *TRIGLYPHOTHRIX* Forel (p. 356)
- Head and body usually with scattered simple setae, very rarely with multifid setae  
or without setae. Scrobes present or absent; when present, never as above . . . . . 32

- 32 Propodeum armed with a pair of spines or teeth of varying configuration. Metapleural lobes or teeth present. Palp formula usually 4,3.  
*TETRAMORIUM* Mayr (p. 355)
- Propodeum unarmed, rounded. Metapleural lobes present. Palp formula 3,2.  
*RHOPTROMYRMEX* Mayr (p. 355)
- 33 Antennal scrobes present above the eyes. Median portion of clypeus vertical, with a dorsal bilobed appendage projecting anteriorly. Usually with bizarre setae present on head, alitrunk and gaster . . . . . *CALYPTOMYRMEX* Emery (p. 347)
- Antennal scrobes absent. Median portion of clypeus not vertical, without a bilobed appendage. Bizarre setae absent . . . . . 34
- 34 Propodeum unarmed, smoothly rounded . . . . . 35
- Propodeum armed with a pair of spines or teeth . . . . . 36
- 35 Clypeus with median portion distinctly longitudinally bicarinate.  
*MONOMORIUM* Mayr (p. 351)
- Clypeus with median portion rounded, not bicarinate.  
*SYLLOPHOPSIS* Santschi (p. 355)
- 36 Gular surface of head with a psammophore. Polymorphic . *MESSOR* Forel (p. 350)
- Gular surface of head without a psammophore. Monomorphic, or dimorphic without intermediates . . . . . 37
- 37 Anterodorsal angles of pronotum sharply angled in dorsal view. Body hairs either clavate or short and very stout. Petiole with a very short, broad peduncle anteriorly . . . . . *LEPTOTHORAX* Mayr (p. 346)
- Anterodorsal angles of pronotum rounded in dorsal view. Body hairs either sparse or abundant and long, but always simple. Petiole with a long anterior peduncle 38
- 38 Dimorphic, without intermediates. In both castes petiolar node antero-posteriorly compressed, conical or subconical in profile and with the dorsal border usually emarginate. Major workers with head emarginate behind and with crushing mandibles usually equipped with 3 teeth, of which two are situated apically and one basally, separated by a large diastema. In the minor worker the sides of the head usually converge behind the eyes so that the occipital margin is short  
*PHEIDOLE* Westwood (p. 350)
- Monomorphic. Petiolar node in profile domed or flattened above, never conical or subconical in shape, never emarginate above . . . . . 39
- 39 Antennal scapes short, not surpassing occipital margin of head. Lateral portions of clypeus projecting forwards over the base of the mandibles. Pronotum smoothly rounded, not tuberculate. Alitrunk and gaster devoid of long setae  
*CARDIOCONDYLA* Emery (p. 341)
- Antennal scapes very long, easily surpassing occipital margin of head. Lateral portions of clypeus not projecting forwards over base of mandibles. Pronotum with a small obtuse tubercle on each side. Entire body clothed with long erect setae . . . . . *MACROMISCHOIDES* Wheeler (p. 347)

#### Subfamily DORYLINAE

- 1 Pedicel of 2 segments. Antennae 10-segmented; genae carinate. Pygidium not impressed, not armed with spines . . . . . *AENICTUS* Shuckard (p. 357)
- Pedicel of a single segment. Antennae 9- to 11-segmented; genae not carinate. Pygidium impressed, armed with a short spine or tooth at each side posteriorly.  
*DORYLUS* Fabricius (p. 357)

#### Subfamily LEPTANILLINAE

- With a single genus in West Africa, answering the characters given in the key to subfamilies . . . . . *LEPTANILLA* Emery (p. 358)

Subfamily PSEUDOMYRMECINAE

- 1 Claws toothed. Palp formula 5,4. Funiculi of antennae not clubbed apically. Eyes occupying one third or more of the side of the head . . . . . 2
- Claws simple. Palp formula 3,3. Funiculi with a club of three segments. Eyes smaller, occupying approximately one fifth of the side of the head . . . . .
- VITICICOLA* Wheeler (p. 359)
- 2 Both petiole and postpetiole with strong ventral processes. Eyes occupying about one third the side of the head. 3 ocelli present . . . . . *PACHYSIMA* Emery (p. 358)
- Petiole only with a weak ventral process, or both nodes without processes. Eyes occupying one third to one half the side of the head. Ocelli variable, often absent, but may be one, two or three developed *TETRAPONERA* F. Smith (p. 358)

Subfamily DOLICHODERINAE

- 1 Scale of petiole well developed, distinct, inclined anteriorly but not reduced nor overhung by first gastral segment dorsally . . . . . *IRIDOMYRMEX* Mayr (p. 359)
- Scale of petiole reduced or vestigial; petiole overhung by first gastral segment dorsally, usually invisible in dorsal view . . . . . 2
- 2 Palp formula 4,3, palpi short . . . . . *ENGRAMMA* Forel (p. 359)
- Palp formula 6,4, palpi long . . . . . 3
- 3 In dorsal view 5 gastral segments visible. Anal and associated orifices apical . . . . . *TECHNOMYRMEX* Mayr (p. 360)
- In dorsal view 4 gastral segments visible. Anal and associated orifices ventral . . . . . *TAPINOMA* Förster (p. 359)

Subfamily FORMICINAE

- 1 Antennae 9-segmented . . . . . *APHOMOMYRMEX* Emery (p. 362)
- Antennae 11-segmented . . . . . 2
- Antennae 12-segmented . . . . . 4
- 2 Palp formula 1,3 or 2,3 Eyes minute. Small hypogaecic ants . . . . . *ACROPYGA* Roger (p. 363)
- Palp formula 6,4. Eyes distinct; ocelli may be present . . . . . 3
- 3 Propodeum bidentate or bituberculate; petiole usually bispinose or bidentate above, occasionally only with upper border strongly emarginate . . . . . *ACANTHOLEPIS* Mayr (p. 363)
- Propodeum unarmed; petiole neither armed nor emarginate above. . . . . *PLAGIOLEPIS* Mayr (p. 364)
- 4 Eyes enormous, occupying almost all the side of the head. Ventrolateral margin of head with a tooth at each side. Propodeum bispinose . . . . . *SANTSCHIELLA* Forel (p. 364)
- Eyes smaller, occupying less than one half the length of the side of the head. Ventrolateral margin of head unarmed; propodeum usually unarmed . . . . . 5
- 5 Ocelli present. Psammophore present on the anterior portion of the gular surface of the head. . . . . *CATAGLYPHIS* Förster (p. 361)
- Ocelli vestigial or absent; psammophore absent . . . . . 6
- 6 Petiole reduced to an elongate, low node, allowing the gaster to be reflexed over the alitrunk. Mandibles elongate triangular, broad, the apical tooth long. Palp formula 5,4 . . . . . *OECOPHYLLA* F. Smith (p. 363)
- Petiole a node or scale, never as above; mandibles not as above. Palp formula usually 6,4, rarely reduced to 3,4 or 3,3, but never 5,4 . . . . . 7
- 7 Antennal insertions very close to, or contiguous with the posterior clypeal margin. Acidopore borne on a conical projection of the hypopygium, forming a nozzle, the orifice surrounded by a fringe of hairs . . . . . 8

- Antennal insertions some distance (usually greater than basal width of scape) behind the posterior clypeal margin. Acidopore not borne on a conical projection of the hypopygium, the orifice usually not surrounded by a fringe of hairs; or the acidopore hidden by a projection of the pygidium . . . . . 10
- 8 Polymorphic. Eyes small in major workers, absent in minors. Clypeus overhanging mandibles in front. Palpi short, indistinct, palp formula reduced to 3,4 in major and 3,3 in minor workers . . . . . **PSEUDOLASIUS** Emery (p. 362)
- Monomorphic. Eyes well developed, occasionally large. Clypeus not or only slightly overhanging the mandibles. Palp formula 6,4, the palpi long and distinct . . . . . 9
- 9 Dorsum of alitrunk with very coarse setae arranged in distinct pairs. Eyes at or in front of the midlength of the head . . . . . **PARATRECHINA** Motschulsky (p. 361)
- Dorsum of alitrunk with fine setae, not definitely paired. Eyes behind the midlength of the head . . . . . **PRENOLEPIS** Mayr (p. 362)
- 10 Anterodorsal pronotal angles usually projecting as spines or teeth, at least strongly marginate. Propodeum usually bispinose or bidentate; petiole with sharp angles, spines or teeth above. Monomorphic . . . . . 11
- Anterodorsal pronotal angles rounded, unarmed. Propodeum unarmed although may be truncated posteriorly. Petiole a node or scale, never with teeth or spines. Polymorphic . . . . . **CAMPONOTUS** Mayr (p. 360)
- 11 Clypeus flat, not longitudinally carinate in the middle, its anterior margin broadly and shallowly emarginate. Acidopore not concealed by the pygidium . . . . . **PHASMOMYRMEX** Stitz (p. 360)
- Clypeus usually convex and longitudinally carinate, its anterior margin usually not emarginate. Acidopore concealed by the pygidium when not in use . . . . . **POLYRHACHIS** F. Smith (p. 361)

#### SYNONYMIC SYNOPSIS AND NOTES ON THE GENERA

##### Subfamily **PONERINAE**

##### Tribe **AMBLYOPONINI**

##### **AMBLYOPONE** Erichson

- Amblyopone* Erichson, 1842, *Arch. Naturgesch.* **8**(1) : 260. Type-species: *Amblyopone australis* Erichson, 1842, op. cit. : 261, by monotypy.
- Stigmatomma* Roger, 1859, *Berl. ent. Z.* **3** : 250. Type-species: *Stigmatomma denticulatum* Roger, 1859, op. cit. : 251, by designation of Bingham, 1903.
- Arotropus* Provancher, 1881, *Can. Nat. & Geol.* **12** : 205. Type-species: *Arotropus binodosus* Provancher, 1881, by monotypy. (= *Amblyopone pallipes* (Haldeman) 1844, *Proc. Acad. nat. Sci. Philad.* **2** : 54.)
- Xymmer* Santschi, 1914, *Boll. Lab. Zool. gen. agr. Portici* **8** : 311 [as a subgenus of *Stigmatomma*]. Type-species: *Stigmatomma (Xymmer) muticum* Santschi, 1914, loc. cit., by monotypy.
- Fulakora* Mann, 1919, *Bull. Mus. comp. Zool. Harv.* **63** : 279 [as a subgenus of *Stigmatomma*]. Type-species: *Stigmatomma (Fulakora) celata* Mann, 1919, loc. cit., by original designation.
- Neoamblyopone* Clark, 1927, in Wheeler, *Proc. Am. Acad. Arts Sci.* **62** : 1 [as a subgenus of *Amblyopone*]. Type-species: *Amblyopone (Neoamblyopone) clarki* Wheeler, 1927, op. cit. : 24, by monotypy.
- Protamblyopone* Clark, 1927, in Wheeler, *Proc. Am. Acad. Arts Sci.* **62** : 1 [as a subgenus of *Amblyopone*]. Type-species: *Amblyopone (Protamblyopone) aberrans* Wheeler, 1927, op. cit. : 26, by monotypy.
- Lithomyrmex* Clark, 1928, *J. Proc. R. Soc. West. Aust.* **14** : 30-31. Type-species: *Lithomyrmex glauerti* Clark, 1928, loc. cit., by original designation.
- Ericapelta* Kusnezov, 1955, *Zool. Anz.* **154** : 273-274. Type-species: *Ericapelta egyptica* Kusnezov, 1955, loc. cit., by monotypy.

The mandibles are long and narrow, inserted far apart at the corners of the clypeus and tending to cross over at rest; their apices acute and their inner margins dentate throughout the length of the blades. The median portion of the clypeus projects anteriorly as a lobe which usually bears a series of denticulae, but in *A. mutica* (Santschi) the lobe is straight and edentate in front. An anterolateral dentiform projection of the gena may be present. On the alitrunk the promesonotal suture is complete, the metanotal may be present or absent. Petiole massive, very broadly attached to the first gastral segment and without a free posterior face. Sculpture is usually fine; the head with fine dense puncturation which may be continued onto the pronotum, or with the pronotum more or less smooth and shining. Palp formulae of 5,3 ; 4,3 ; 3,2 and 2,2 have been recorded in the genus (Brown, 1960). Workers are found in moist soil and have been recovered from leaf-litter samples by Berlese funnel separation.

*Amblyopone* is represented in West Africa by a few rare and little known species, mostly with a savannah distribution.

### MYSTRIMUM Roger

*Mystrium* Roger, 1862, *Berl. ent. Z.* 6 : 245. Type-species: *Mystrium mysticum* Roger, 1862, loc. cit., by monotypy.

Mandibles very long, noticeably longer than the head, broad and blunt apically, their inner margins with a double row of short teeth. The anterior margin of the median portion of the clypeus is denticulate, the genal teeth are well developed and project anteriorly. Structure of alitrunk and petiole as in *Amblyopone* but the metanotal suture represented by a weak impression dorsally, which does not break the sculpture. The tarsal segments possess numerous spiniform setae, most abundant on the internal surface of the basal segment, more evenly distributed on the remaining segments. Sculpture of a coarse reticulation over the head and alitrunk; all dorsal surfaces of head and body with spatulate setae present. Menozzi (1929) and Brown (1960) give a palp formula of 4,3 for the genus.

Known only from a single species in West Africa, distributed throughout the forest zone, *M. silvestrii* Santschi has been noted in Ghana nesting in soil at the base of a cocoa tree in an old (abandoned) cocoa plantation.

### Tribe PLATYTHYREINI

#### PLATYTHYREA Roger

*Platythyrea* Roger, 1863, *Berl. ent. Z.* 7 : 172. Type-species : *Pachycondyla punctata* F. Smith, 1858, *Cat. Hym. Brit. Mus.* 6 : 108, by designation of Bingham, 1903.

This genus and the one below constitute the tribe Platythyreini as represented in West Africa, and are easily recognizable by the distinctive sculpture which both possess.

Entirety of head, alitrunk, pedicel, gaster and appendages with very fine shagreening and with scattered larger, shallow punctures. All surfaces covered by an extremely fine dense pubescence and devoid of standing hairs.

*Platythyrea* is further distinguished by the possession of two pectinate spurs on each of the middle and hind tibiae, and the presence of a median tooth on the pretarsal claws. Palp formulae of 6,4 and 3,2 have been recorded in West African species, the majority of which nest in rotten wood on the ground or in rotten parts of standing trees. The lobes of the frontal carinae are usually broad and fused to the clypeus in front. Clypeus itself is broad and convex, not carinate; eyes are always present although they may be reduced. Antennae 12-segmented,

often with the second funicular segment longer than the first or third. Alitrunk with promesonotal suture distinct, the metanotal obsolete or absent. Petiole a large node, often with the posterodorsal margin extended into dentiform projections.

### **PROBOLOMYRMEX** Mayr

*Probolomyrmex* Mayr, 1901, *Annl. naturh. Mus. Wien* **16** : 2. Type-species: *Probolomyrmex filiformis* Mayr, 1901, op. cit. : 3, by monotypy.

*Escherichia* Forel, 1910, *Zool. Jb., Abt. Syst.* **29** : 245. Type-species: *Escherichia brevisrostris* Forel, 1910, op. cit. : 246, by monotypy.

Sculpture is as in *Platythyrea* above; *Probolomyrmex* has the following distinguishing features.

Frontal carinae fused together and fused to the clypeus, projecting as a plate over the mandibles. Antennae inserted close together and close to the anterior margin of this plate, their condylar bulbs exposed in dorsal view. Antennae 12-segmented, the funicular segments becoming thicker towards the apex. Palp formula 4,2 (Taylor, 1965). Alitrunk without dorsal sutures. Middle and hind tibiae each with a single pectinate spur; claws simple.

*Probolomyrmex*, a rare genus of small ants with a tropicopolitan distribution is represented in Africa by three species, one of which, *P. guineensis* Taylor occurs in West Africa. Nests are made in small pieces of rotted wood in cultivated or otherwise disturbed ground on the coastal plain.

### Tribe ECTATOMMINI

#### **DISCOTHYREA** Roger

*Discothyrea* Roger, 1863, *Berl. ent. Z.* **7** : 176. Type-species: *Discothyrea testacea* Roger, 1863, op. cit. : 177, by monotypy.

*Pseudosysphincta* Arnold, 1916, *Ann. S. Afr. Mus.* **14** (2) : 161. Type-species: *Pseudosysphincta poweri* Arnold, 1916, op. cit. : 162, by original designation.

*Prodiscothyrea* Wheeler, 1916, *Trans. R. Soc. West. Aust.* **40** : 33. Type-species: *Prodiscothyrea velutina* Wheeler, 1916, op. cit. : 34, by monotypy.

*Pseudosysphincta* Wheeler, 1922, *Bull. Am. Mus. nat. Hist.* **45** : 645, 762. [Variant spelling of *Pseudosysphincta*.]

Characters shared by the two genera *Discothyrea* and *Proceratium* include reduction in size of the eyes and depigmentation of the body in response to cryptobiotic habits, raised frontal carinae leaving the condylar bulbs of the antennae exposed in dorsal view, lack of sutures on the dorsum of the alitrunk, and strong vaulting of the second gastral segment so that the remaining segments are directed anteriorly below the first and second.

In *Discothyrea* the mandibles are overhung by the clypeus, and are edentate; the antennae are nine or eleven-segmented in known West African species, with the apical funicular segment strongly swollen and bulbous. Spurs on the middle tibiae small and simple, those on the hind tibiae pectinate. Sculpture of dense puncturation over most of the body.

Both species found in West Africa, *D. oculata* Emery with nine-segmented antennae, and *D. mixta* Brown with eleven-segmented antennae, are apparently confined to the forest zone. *D. oculata* is found throughout the region although quite rarely, whilst *D. mixta* was originally described from Liberia and is now also known to occur in Ghana.

*Discothyrea* and the closely related genus *Proceratium* represent the tribe Ectatommini in West Africa. The former genus has a southerly distribution, whilst the

latter is mostly confined to the northern hemisphere, but in the tropics their ranges tend to overlap. Both genera are cryptobiotic and form small colonies, usually in rotten wood just below the surface of the ground. Workers have also been recovered from Berlese funnel samples of leaf-litter.

### *PROCERATIUM* Roger

*Proceratium* Roger, 1863, *Berl. ent. Z.* **7** : 171. Type-species: *Proceratium silaceum* Roger, 1863, op. cit. : 172, by monotypy.

*Sysphingta* Roger, 1863, *Berl. ent. Z.* **7** : 175. Type-species: *Sysphingta micrommata* Roger, 1863, op. cit. : 176, by monotypy.

*Sysphincta* Mayr, 1865, *Reise der ... Fregatte Novara*, Zool. **2** : 12. Wien. [Emendation of *Sysphingta*.]

Known from West Africa by a single new species discovered at Legon, Ghana, in a small piece of rotten wood by D. Leston, and to be described elsewhere by him.

*Proceratium* shares a number of characters with *Discothyrea* as mentioned above but has the mandibles armed with three teeth, only slightly overhung by the clypeus, the antennae 12-segmented with the apical segment enlarged but not bulbous. Brown (1958) records palp formulae of 4,3; 3,2; and 2,2 in the genus; that of the West African species is found to be 4,3.

### Tribe ODONTOMACHINI

### *ODONTOMACHUS* Latreille

*Odontomachus* Latreille, 1805, *Hist. Nat. Crust. Ins.* **13** : 257. Type-species: *Formica haematoda* Linnaeus, 1758, *Syst. Nat.* ed. **10** : 582, by original designation.

*Pedetes* Bernstein, 1861, *Verh. zool.-bot. Ges. Wien* **11** : 7. Type-species: *Pedetes macrorhynchus* Bernstein, 1861. [Nomen nudum.]

Mandibles elongate, linear, inserted close to the midline of the anterior margin of the head and meeting throughout their length when at rest. When fully open the mandibles form a line at right angles to the long axis of the head. Apical mandibular armament of three teeth arranged in a vertical series, the dorsalmost tooth truncated. Eyes situated close to the anterior margin of the head, separated from the frontal carinae by a broad longitudinal impression. Palp formula 4,4 or 4,3. Node of petiole ending in a long spine dorsally; gaster not impressed between first and second segments.

Of the two species found in West Africa, *O. haematodus* (L.) prefers open or loosely wooded areas whilst *O. assiniensis* Emery is more commonly found in thick bush and more dense forest. Both species nest in rotten wood at ground level, and *O. haematodus* may nest at the bases of trees, especially in cultivated areas. When the nests are in such a location the ants often ascend the tree to forage, one of the few ponerine species to do so in West Africa.

### *ANOCHECUS* Mayr

*Anochetus* Mayr, 1861, *Europ. Formicid.* : 53. Type-species: *Odontomachus ghilianii* Spinola, 1851, *Memorie Accad. Sci. Torino* (2) **13** : 71, by designation of Bingham, 1903.

*Myrmapatetes* Wheeler, 1929, *Am. Mus. Novit.* no. **349** : 6. Type-species: *Myrmapatetes filicornis* Wheeler, 1929, loc. cit., by original designation.

Answering to the description given above for *Odontomachus* but the apical mandibular armament with the dorsalmost tooth acute, the palp formula 4,3 and the petiolar node not ending in a spine dorsally. Whilst these characters hold good for the species of West Africa they do not, unfortunately, apply throughout the world and *Anochetus* is at best a very weak genus, hardly if at all separable from *Odontomachus*.

The majority of species are found in leaf-litter and rotten wood, but one species is known to nest and forage arborially.

### Tribe PONERINI

#### ASPINCTOPONE Santschi

*Asphinctopone* Santschi, 1914, *Boll. Lab. Zool. gen. agr. Portici* 8 : 318. Type-species: *Asphinctopone silvestrii* Santschi, 1914, loc. cit., by monotypy.

*Lepidopone* Bernard, 1952, *Mém. Inst. franç. Afr. noire* no. 19 : 207. Type-species: *Lepidopone lamottei* Bernard, 1952, op. cit. : 208, by monotypy.

Mandibles somewhat elongate, armed with five teeth, the basal internal margin with a distinct notch just before the articulation, which is concealed by the clypeus when the mandibles are completely closed. Clypeus bluntly carinate, the median portion projecting as a rectangular lobe. Eyes reduced. Dorsum of alitrunk with promesonotal suture and metanotal groove present, distinct, the latter very deeply impressed, with longitudinal ribbing. Declivity of propodeum steep, marginate at sides and above. Petiole a high, narrow scale, the posterior peduncle with a number of distinct raised transverse ridges. Subpetiolar process complex, with three prominences. Gaster with a large anteroventral process on the first segment; not constricted between the first and second segments.

*A. silvestrii* Santschi has the head finely and densely punctate, the pronotum sparsely punctate with wide shining interspaces and a virtual lack of puncturation on the mesonotum. Propodeum with sparse, more coarse punctures, considerably larger than those on the pronotum.

This rarely found genus is closely related to *Mesoponera*. The specimens before me were found in a black-rotten, very wet banana trunk, near Ibadan, Western Nigeria.

#### BOTHROPONERA Mayr

*Bothroponera* Mayr, 1862, *Verh. zool.-bot. Ges. Wien*. 12 : 717. Type-species: *Ponera pumicosa*

Roger, 1860, *Berl. ent. Z.* 4 : 29, by designation of Emery, 1901, *Annl. Soc. ent. Belg.* 45 : 45.

*Pseudoneoponera* Donisthorpe, 1943, *Ann. Mag. nat. Hist.* (11)10 : 439. Type-species: *Pseudoneoponera verecundae* Donisthorpe, 1943, loc. cit., by original designation.

Medium to large ants, usually quite coarsely sculptured and black in colour, occasionally dark brown or deep red-brown. Mandibles dentate, usually with six or seven teeth, reduced to four or five in the *B. nasica* Santschi group. *B. sjoestedti* (Mayr) has a mandibular fovea situated basally on the dorsolateral surface as in *Brachyponera*, *Trachymesopus* and *Cryptopone*. Palp formula usually 4,4, reduced to 2,2 in *B. sjoestedti* and the *B. nasica* group. Alitrunk with promesonotal suture present, mobile, the metanotal absent. In dorsal view the propodeum is scarcely or not narrower than the pronotum. Petiole thick and nodiform. Middle and hind tibiae each with a large pectinate and a small simple spur, the latter may be very much reduced in members of the *B. nasica* species-group.

The majority of *Bothroponera* species are bush and forest inhabiting ants, nesting in rotten wood or directly into hard-packed earth. The larger species are mostly



free foragers and often nocturnal, but the smaller forms are more cryptic and are often found in association with termites. Most free foraging species prefer well shaded and moist habitats and are very rarely found in the open.

### **BRACHYPONERA** Emery

*Brachyponera* Emery, 1901, *Annl. Soc. ent. Belg.* **45** : 43 [as a subgenus of *Euponera*.] Type-species: *Ponera senaarensis* Mayr, 1862, *Verh. zool.-bot. Ges. Wien.* **12** : 721, by original designation.

*Brachyponera* Emery; Wilson, 1958, *Bull. Mus. comp. Zool. Harv.* **119** : 346. [Raised to genus.]

Represented by a single species *B. senaarensis* (Mayr) in West Africa.

Mandibles with a distinct, oval pit or fovea on the dorsolateral surface. Palp formula 3,3. Eyes quite large, their maximum diameter distinctly greater than the maximum width of the scape. Promesonotal suture distinct, metanotal groove distinct and deeply impressed. Propodeum narrowed dorsally, in dorsal view narrower than the pronotum. Petiole a thick scale; gaster weakly impressed between first and second segments. Extremely finely and densely punctate everywhere.

*B. senaarensis* is essentially a savannah species, but penetrates the forest zone bordering on savannah. Nests are made directly into the soil, usually in direct sunlight which the species makes no attempt to avoid. It is present throughout the West African savannah.

### **CACOPONE** Santschi

*Cacopone* Santschi, 1914, *Boll. Lab. Zool. gen. agr. Portici* **8** : 325. Type-species: *Cacopone hastifer* Santschi, 1914, loc. cit., by monotypy.

A monotypic genus very close to and probably inseparable from *Plectroctena*. It shares the characteristic mandibular form and articulation with *Plectroctena* (see below) and only differs from that genus in details of mandibular structure and nodal form.

Mandibles elongate, linear, the internal margins edentate but with the distal half distinctly swollen and then narrowing to the apex. Eyes very much reduced and depigmented, difficult to see. Petiole node without a distinct anterior face, in profile this surface rounding convexly into the dorsal surface.

*C. hastifer* Santschi is a little known species whose life-way is apparently completely subterranean; confined to forested areas.

### **CENTROMYRMEX** Mayr

*Centromyrmex* Mayr, 1866, *Verh. zool.-bot. Ges. Wien* **16** : 894. Type-species: *Centromyrmex bohemanni* Mayr, 1866, op. cit. : 895, by monotypy.

*Spalacomyrmex* Emery, 1889, *Annali Mus. civ. Stor. nat. Giacoma Doria* **27** : 489. Type-species: *Spalacomyrmex feae* Emery, 1889, loc. cit., by monotypy.

*Typhloteras* Karawajew, 1925, *Konowia* **4** : 128. Type-species: *Typhloteras hamulatum* Karawajew, 1925, op. cit. : 129, by monotypy.

- Glyphopone* Forel, 1913, *Revue Zool. afr.* **2** : 308. Type-species: *Glyphopone bequaerti* Forel, 1913, loc. cit., by monotypy.
- Leptopone* Arnold, 1916, *Ann. S. Afr. Mus.* **14** : 163 [as a subgenus of *Glyphopone*]. Type-species: *Glyphopone (Leptopone) rufigaster* Arnold, 1916, loc. cit. [= *Centromyrmex bequaerti* (Forel, 1913)], by original designation.

A single West African species, *C. sellaris* Mayr.

Mandibles strongly downcurved; median portion of clypeus almost vertical; eyes absent. Pronotum and mesonotum flat dorsally, the former strongly margined anteriorly and laterally. Metanotal groove absent but propodeum pinched in, and strongly concave at about the middle of its length in lateral view. Propodeum convex behind this impression and rounding into an almost straight and vertical declivitous face. Subpetiolar process a simple spine; gaster not constricted between first and second segments. Coxae large, those of the anterior legs relatively enormous. Tarsal segments on all legs equipped with numerous downcurved spines and stiff setae, present also on the extensor (outer) surfaces of the middle tibiae and the apices of the hind tibiae. Apical spurs of tibiae of middle legs both small and simple; hind tibiae with one large pectinate and one small simple spur.

*C. sellaris* is a totally subterranean ant usually found with termites either in or under rotten logs which the termites are eating, or moving through galleries in the outer walls of the nests of mound-building termites. Occasionally it is found in hard-packed earth above colonies of termites which do not raise mounds. The abundantly spiny tarsi of this species give traction on the walls of underground tunnels and are found (less well developed) in other, unrelated genera which have similar habits.

### CRYPTOPONE Emery

- Cryptopone* Emery, 1892, *Annls Soc. ent. Fr.* **61** : 275. Type-species: *Cryptopone testacea* Emery, 1893, *Annls Soc. ent. Fr.* **62** : 240-241, nec ?*Amblyopone testacea* Motschulsky, 1863, *Bull. Soc. Nat. Moscou* **36** : 15, by designation of Wilson, 1958, *Bull. Mus. comp. Zool. Harv.* **119** (4) : 360-361.

Small ants (less than 4 mm), yellowish or ferruginous in colour. Apical mandibular margin armed with four to six teeth; basally the mandible with a distinct pit or fovea on the dorso-lateral surface. Middle tibiae with stout spinules on the extensor surface. Eyes minute or absent. Palp formula 2,2 or less (Brown, 1963).

The two species originally described from Africa in this genus were removed to *Ponera* by Brown (1963 : 6) and later to *Hypoponera* by Taylor (1967 : 11), who also pointed out that a number of small African species of *Hypoponera* are convergent upon *Cryptopone*. Brown (1963 : 4) indicates that ponerine ants possessing a basal mandibular pit or fovea are chiefly of African origin and expresses surprise that 'no true *Cryptopone* are known to occur in Ethiopian Africa'. The genus is included in the present study on the assumption that specimens will eventually be discovered in sub-Saharan Africa.

### HYPOPONERA Santschi

- Hypoponera* Santschi, 1938, *Bull. Soc. ent. Fr.* **43** : 78-80 [as a subgenus of *Ponera*]. Type-species: *Ponera abeillei* E. André, 1881, *Annls Soc. ent. Fr.* (6)**1** : 48, by original designation.
- Hypoponera* Santschi; Taylor, 1967, *Pacif. Insects Monogr.* **13** : 9-12. [Raised to genus.]

Small ants superficially similar to *Cryptopone* above. Mandibles armed with three or four teeth apically, usually followed by a series of denticulae, without a basal mandibular pit. Palp formula 1,1, or 1,2 (Taylor, 1967). Eyes reduced, usually present but absent in a few species. Middle and hind tibiae each with a single pectinate spur; no spinules present on extensor surfaces of middle tibiae. Sculpture usually of fine dense puncturation.

Species of *Hypoponera* are common in West Africa, in leaf-litter and log-mould and are found nesting in fallen twigs, rotten logs (particularly when the bark is still present), compressed leaf-litter or hard-packed earth. Colonies are small and the individual ants are relatively slow-moving. Some species look very similar to *Cryptopone*, as mentioned above, but the distinctions given are sufficient to separate the two genera. True *Ponera*, as defined by Taylor (1967: 5-9) does not occur in West Africa.

### LEPTOGENYS Roger

*Leptogenys* Roger, 1861, *Berl. ent. Z.* 5 : 41. Type-species: *Leptogenys falcigera* Roger, 1861, op. cit. : 42, by designation of Bingham, 1903.

*Dorylozelus* Forel, 1915, *Ark. Zool.* 9(19) : 24-25. Type-species: *Dorylozelusm joebergi* Forel, 1915, loc. cit., by monotypy.

*Microbolbos* Donisthorpe, 1948, *Entomologist* 81 : 170. Type-species: *Microbolbos testaceus* Donisthorpe, 1948, loc. cit., by original designation.

Formerly included in its own tribe, Leptogenyini, which was synonymized to Ponerini by Brown (1963).

Mandibles of varying shape, may be elongate, linear and curved, or short and quite broad but always more or less edentate, with only one or two teeth situated apically. Mandibles articulated at extreme corners of anterior margin of head. Median portion of clypeus carinate, produced anteriorly into a lobe or point. Palp formula 4,4. Lobes of frontal carinae small, usually only partially covering the condylar bulbs of the antennal scapes in dorsal view. Middle and hind tibiae each with one large pectinate and one small simple spur. Claws pectinate, incompletely so in some species. Gaster weakly impressed between first and second segments.

The genus *Leptogenys* is distributed throughout West Africa but the greatest number of species inhabit the forest zone where they usually nest in wet-rotten wood or in hard-packed soil, and in leaf-litter under fallen tree trunks.

### MEGAPONERA Mayr

*Megaponera* Mayr, 1862, *Verh. zool.-bot. Ges. Wien* 12 : 734. Type-species: *Formica foetens* Fabricius, 1793, *Ent. Syst.* 2 : 354, by monotypy.

*Megaloponera* Roger, 1863, *Verzeichniss Formiciden-Gattungen*: 17. Type-species: *Formica foetens* Fabricius, 1793, *Ent. Syst.* 2 : 354, by monotypy.

A monotypic genus, the species of which is confined to savannah regions in West Africa.

Dimorphic. Palp formula 4,4. Clypeus with median area swollen but not carinate nor raised and projecting. Gena on each side with a distinct longitudinal carina running from the eye to the mandibular insertion. Middle and hind tibiae each with one large pectinate and one small simple spur; claws armed with a tooth near the base.

*M. foetens* (F.) has an aromatic odour and stridulates audibly when disturbed. Nests are made in the earth, from which columns of ants emerge to raid nearby termite nests.

### MESOPONERA Emery

*Mesoponera* Emery, 1901, *Annls Soc. ent. Belg.* **45** : 43 [as a subgenus of *Euponera*]. Type-species: *Ponera cafraria* F. Smith, 1858, *Cat. Hym. Brit. Mus.* **6** : 91, by original designation. *Mesoponera* Emery; Wilson, 1958, *Bull. Mus. comp. Zool. Harv.* **119** : 349. [Raised to genus.]

Mandibles triangular or elongate triangular, usually with more than eight teeth, without a basal pit on the dorsolateral surface. Palp formula 4,4. Clypeus longitudinally carinate, may project anteromedially as a short tooth. Promesonotal suture present, metanotal groove present and impressed. Propodeum compressed above, its dorsum considerably narrower than the pronotum. Petiole a thick scale. Middle and hind tibiae each with two spurs, one large and pectinate, the other small and simple. Extensor surfaces of middle tibiae without spinules; claws simple. Sculpture of fine dense puncturation.

The West African species of *Mesoponera* nest in rotten wood on the ground and forage in the leaf-litter and in the soil below logs and stones.

### PALTOTHYREUS Mayr

*Paltothyreus* Mayr, 1862, *Verh. zool.-bot. Ges. Wien.* **12** : 735. Type-species: *Formica tarsata* Fabricius, 1798, *Ent. Syst. Suppl.* : 280, by monotypy.

The single species of this genus, *P. tarsatus* (F.), is the common 'Stink Ant'.

Large, total length 15 mm or more. Clypeus with median portion abruptly raised and projecting forwards as a truncated lobe. Palp formula 4,4. Promesonotal suture distinct, metanotal groove indicated by a weak impression which does not break the sculpture. Petiole a thick scale. Middle and hind tibiae each with a large pectinate and a small simple spur. Claws with a median tooth. Head and alitrunk striate dorsally, strongly arched on the pronotum; Generally the sculpturation becomes finer from the front to the back of the dorsum of the alitrunk, disappearing on the gaster.

Nests are made directly into the ground, either in the open or with the nest entrance beside a rock or piece of wood. The ants are general scavengers and carnivores, usually foraging singly but occasionally found in small processions.

### PHRYNOPONERA Wheeler

*Phrynoponera* Wheeler, 1920, *Psyche, Camb.* **27** : 53. Type-species: *Bothroponera gabonensis* E. André, 1892, *Revue Ent.* **11** : 50, by original designation.

Mandibles with four to seven teeth; palp formula 4,4. Median portion of clypeus bluntly bidentate in the more common species, but not so in all species. Promesonotal suture present, metanotal absent. Propodeum with two blunt, dorsoventrally flattened spines or teeth. Petiole a thick scale, recurved over the anterior dorsum of the first gastral segment and terminating dorsally in a comb of five teeth. Gaster not impressed between first and second segments.

Nests in damp-rotten logs, usually well embedded in leaf-litter or soil, and often associated with termites. Uncommon ants, very rarely found outside the log containing the nest. The genus is very closely related to *Bothroponera*.

**PLECTROCTENA** F. Smith

*Plectroctena* F. Smith, 1858, *Cat. Hym. Brit. Mus.* 6 : 101. Type-species: *Plectroctena mandibularis* F. Smith, 1858, loc. cit., by monotypy.

Mandibles elongate, linear, weakly curved, with not more than two blunt teeth on the inner margin. Mandibular articulation associated with a marked excavation of the anterior margin of the head in front of the eye. Palp formula 2,4. Median portion of clypeus reduced, vertical; the frontal carinae almost overhanging the anterior margin of the head in dorsal view. Eyes small to minute, occasionally depigmented. Promesonotal suture distinct; metanotal groove absent or represented by a weak impression on the dorsum of the alitrunk. Petiole a distinct node; gaster strongly impressed between first and second segments. Middle and hind tibiae each with a single pectinate spur; claws simple.

Nests are made in rotten wood, usually of fallen trees with the bark still attached, by the larger black species of the *P. mandibularis* F. Smith group of species. The smaller, depigmented (usually red-brown) species of the *P. subterranea* Arnold group prefer wood in a much more advanced state of decay, or nest directly into hard-packed earth. Sculpturation throughout the genus is mostly of puncturation, which tends to be more coarse in the *P. subterranea* group, and in which the eyes are much more reduced than in the larger species.

**PROMYOPIAS** Santschi

*Promyopias* Santschi, 1914, *Boll. Lab. Zool. gen. agr. Portici* 8 : 323 [as a subgenus of *Myopias*].

Type-species: *Myopias (Promyopias) silvestrii* Santschi, 1914, op. cit. : 324, by monotypy. *Promyopias* Santschi; Emery, 1915, *Boll. Lab. Zool. gen. agr. Portici* 10 : 26. [Raised to genus.]

Mandibles elongate, weakly curved, armed apically with three teeth, the inner margins retaining traces of small teeth. Median portion of clypeus not wholly vertical, the frontal carinae not overhanging the anterior margin of the head. Mandibular articulations not associated with marked excavations of the anterior margin of the head. Extensor surfaces of middle tibiae with numerous spines and stiff setae. Hind tibiae with two spurs, one large and pectinate, the other small and simple; claws simple. Petiole a node, gaster very weakly impressed between first and second segments.

The single species *P. silvestrii* Santschi is rare and apparently restricted to the forest zone.

**PSALIDOMYRMEX** E. André

*Psalidomyrmex* E. André, 1890, *Revue Ent.* 9 : 313. Type-species: *Psalidomyrmex foveolatus* E. André, 1890, op. cit. : 314, by monotypy.

Rare, medium to large ants restricted to the forest zones of West and Central Africa.

Mandibles edentate to weakly toothed, varying in shape from subtriangular to falcate, always with the apex prolonged into a long, acute point, crossing over at rest. Basal mandibular groove distinct. Palp formula 3,4. Promesonotal suture distinct, mobile, metanotal absent. Petiole a node; gaster strongly impressed between first and second segments. Middle and hind tibiae with a single pectinate spur, claws simple. Basic sculpture consists of large shallow foveolae or pits, from each of which a single seta arises. The interspaces between such pits usually finely striate.

The species of this uncommon genus nest in rotten wood, usually in an advanced state of decay, and forage in and below rotten logs and in deep leaf-litter.

### **TRACHYMESOPUS** Emery

*Trachymesopus* Emery, 1911, *Genera Insect.*, Ponerinae : 84 [as a subgenus of *Euponera*].

Type-species: *Formica stigma* Fabricius, 1804, *Syst. Piez.* : 400, by original designation.

*Trachymesopus* Emery; Wilson, 1958, *Bull. Mus. comp. Zool. Harv.* **119** : 352. [Raised to genus.]

Mandibles triangular, dentate; basally with a distinct pit or fovea on the dorsolateral surface. Palp formula 4,4. Clypeus carinate medially. Eyes small, their maximum diameter less than the maximum width of the scape. Promesonotal suture distinct, metanotal groove present, very weakly impressed. Propodeum compressed, its dorsum narrower than that of the pronotum. Petiole a thick scale; gaster distinctly impressed between the first and second segments. Middle and hind tibiae each with one large pectinate and one small simple spur, claws simple. Sculpture of fine dense puncturation.

The single species occurring in West Africa, *T. brunoi* (Forel), is quite common in wooded areas, nesting either in rotten wood or in soil and foraging in leaf-litter, rotten wood, or in the earth, often being found with termites.

### Subfamily **CERAPACHYINAE**

#### Tribe **CERAPACHYINI**

#### **CERAPACHYS** F. Smith

*Cerapachys* F. Smith, 1857, *J. Proc. Linn. Soc.* **2** : 74. Type-species: *Cerapachys antennatus* F. Smith, 1857, loc. cit., by monotypy.

Antennae 11- or 12- segmented, the apical funicular segment greatly swollen and forming a one-segmented club. Mandibles edentate or denticulate; palp formula 2,2 (Gotwald, 1969.) Frontal carinae raised, exposing the condylar bulbs of the antennae in dorsal view. Genae longitudinally carinate; eyes present. Dorsum of alitrunk devoid of sutures. Petiole a distinct and massive node; gastral constriction between the first and second segments often extreme, so that the pedicel in some species consists, to all intents and purposes of petiole and postpetiole. Petiole never marginate laterally. Pygidium impressed, armed laterally or posteriorly with a row of spines or denticulae. Middle and hind tibiae with two spurs, claws simple.

Usually small, black or brown-black ants nesting in soil, rotten twigs or small pieces of wood in the leaf-litter. Specimens are most often obtained by use of a Berlese funnel. Nests may occasionally be found under the bark of trees, at or near ground level. Uncommon ants, all known species raid the nests of other ants for food.

### **PHYRACACES** Emery

*Phyracaces* Emery, 1902, *Rc. Sess. Accad. Sci. Ist. Bologna*, N.S. **6** : 23. Type-species: *Cerapachys mayri* Forel, 1892, in Grandidier, *Hist. Nat. Phys. Madagascar* **20** : 244, by original designation.

Closely related to, and answering to the description of *Cerapachys* above; differing in the following respects:

Antennae 12-segmented, the apical three funicular segments forming a club. Palp formula 4,3 in species examined. Node of petiole distinctly marginate laterally and often armed posterodorsally with a pair of teeth.

Nesting and foraging as in *Cerapachys*.

### *SPHINCTOMYRMEX* Mayr

*Sphinctomyrmex* Mayr, 1866, *Verh. zool.-bot. Ges. Wien* **16** : 895. Type-species: *Sphinctomyrmex stahli* Mayr, 1866, loc. cit., by monotypy.

*Aethiopopone* Santschi, 1930, *Bull. Annl. Soc. ent. Belg.* **70** : 49. Type-species: *Sphinctomyrmex rufiventris* Santschi, 1915, *Annl. Soc. ent. Fr.* **84** : 244, by original designation.

Answering to the description of *Cerapachys* above but differing in the following respects: Antennae of twelve segments, club of funiculus not formed of apical segment only. Palp formula 3,3 (Gotwald, 1969). Eyes absent. Segments of gaster separated from each other by distinct constrictions.

Rare, collected only from Berlese funnel extracts of forest leaf-litter.

## Tribe CYLINDROMYRMICINI

### *SIMOPONE* Forel

*Simopone* Forel, 1891, in Grandidier, *Hist. Phys. Nat. Madagascar* **20**, 2 : 139. Type-species: *Simopone grandidieri* Forel, 1891, op. cit.: 141, by monotypy.

Mandibles edentate or weakly denticulate. Palp formula 6,4 or 3,2 in species examined. Frontal carinae reduced, but not usually vertical, the condylar bulbs of the antennae visible. Antennae 11-segmented, the scape short, flattened and subtriangular in shape. Eyes large, ocelli present. Dorsum of alitrunk devoid of sutures although the line of the promesonotal suture may be marked by a row of pits or short longitudinal ribs. Petiole a low node; constriction between first and second gastral segments deep. Pygidium impressed, armed on each side by a row of stumpy spines. Middle tibiae without spurs, hind tibiae each with a large pectinate spur; claws toothed.

Arboreal ants, usually black in colour, more rarely depigmented and yellowish. Nests are made in hollow twigs or rotten branches of trees, often a considerable distance above ground. The species are rare and appear to be mainly nocturnal in behaviour.

## Subfamily MYRMICINAE

### Tribe CARDIOCONDYLINI

#### *CARDIOCONDYLA* Emery

*Cardiocondyla* Emery, 1869, *Annali Accad. Aspir. Nat. Napoli* (2) **2** : 20. Type-species: *Cardiocondyla elegans* Emery, 1869, op. cit. : 21, by monotypy.

*Emeryia* Forel, 1890, *Annl. Soc. ent. Belg.* **34** : 110. Type-species: *Emeryia wroughtoni* Forel, 1890, loc. cit., by monotypy.

Lateral portions of clypeus projecting forwards over the basal margins of the mandibles. Eyes well developed, situated well in front of the midlength of the head. Antennae 12-segmented, with a three-segmented club, the scapes short, failing to reach the posterior margin of the head. Promesonotal suture absent, metanotal groove impressed. Propodeum armed with

a pair of teeth or spines. Petiole with a long peduncle in front; in dorsal view the postpetiole very broad, almost or quite twice as broad as the petiole. Middle and hind tibiae without spurs. Sculpture usually of fine dense puncturation on head and alitrunk, absent from the gaster. A sparse pubescence present but no long setae except on the anterior clypeal margin.

Small to minute ants which nest in soil, usually at the bases of trees, or in compressed leaf-litter. The workers forage in the leaf-litter or ascend trees to tend aphids and coccids.

### Tribe CATAULACINI *CATAULACUS* F. Smith

*Cataulacus* F. Smith, 1853, *Trans ent. Soc. Lond.* 2 : 225. Type-species: *Cataulacus taprobanae* F. Smith, 1853, loc. cit., by designation of Bingham, 1903.

Mandibles edentate to weakly denticulate. Palp formula 5,3. Antennae 11-segmented with a club of three segments. Antennal scrobes present, running below the eyes which are usually well developed and situated behind the midlength of the head. Sides of head between eye and occipital corner often armed with numerous laterally projecting denticles, the occipital corner itself usually armed with a tooth. Dorsum of alitrunk without sutures or with the sutures weakly marked. Sides of pronotum strongly marginate, armed with a number of small teeth or an angular projection. Propodeum with a pair of spines or teeth. Entire visible dorsum of gaster occupied by the tergite of the first segment. Head, alitrunk and gaster considerably dorsoventrally compressed.

Armoured, usually black, arboreal ants nesting in hollow or rotten twigs and branches which are still attached to the tree.

### Tribe CREMATOGASTRINI *CREMATOGASTER* Lund

*Crematogaster* Lund, 1831, *Annls Sci. nat.* 23 : 132. Type-species: *Formica scutellaris* Olivier, 1791, *Encyl. Méthod. Histoire Naturelle. Insectes* 6 : 497, by designation of Bingham, 1903. *Acrocoelia* Mayr, 1852, *Verh. zool.-bot. Ges. Wien.* 2 : 146. Type-species: *Acrocoelia ruficeps* Mayr, 1852, op. cit. : 147 [= *Formica scutellaris* Olivier, 1791].

*Tranopeltoides* Wheeler, 1922, *Am. Mus. Novit.* no. 48 : 10. Type-species: *Tranopelta huberi* Forel, 1907, *Hamburg. Jb. wiss. Anst.* 24 (2) : 5, by original designation.

Mandibles with four or five teeth; palp formula usually 5,3, rarely 4,3. Antennae 10- or 11-segmented, the club undifferentiated or of two, three or four segments. Eyes present, usually well developed, situated at or just behind the midlength of the side of the head. Promesonotal suture usually represented by a weak impression which fails to break the sculpture, more rarely it is well developed or absent. Metanotal groove impressed, often deeply so. Propodeum armed with a pair of spines or teeth, rarely reduced to tubercles or absent. Petiole dorsoventrally flattened, without a node, the dorsal surface weakly convex to weakly concave. Postpetiole a node, often with a median longitudinal groove, attached to the dorsum of the first gastral segment. Gaster heart-shaped or triangular in dorsal view. Sting spatulate. Tarsal claws simple, often large.

A large genus of mostly arboreal ants. In the majority of cases nests are made in hollow or rotten twigs and branches, or directly into the trunk of the tree, but in some cases a large carton-nest of chewed wood is made and attached to the trunk, often high up the tree.



The unusual construction of the pedicel allows the gaster to be reflexed over the alitrunk, and when agitated the ants run about with the gaster held in this position. Most species are avid tenders of coccids and some build protective tents of vegetable matter over aggregations of coccids.

### Tribe DACETINI

#### *CODIOMYRMEX* Wheeler

*Codiomyrmex* Wheeler, 1916, *Bull. Mus. comp. Zool. Harv.* **60** : 326. Type-species: *Codiomyrmex thaxteri* Wheeler, 1916, op. cit., : 327, by original designation.

Mandibles short, subtriangular, with less than ten teeth arranged in such a way that in dorsal view only three or four are visible, the rest arranged in a more or less vertical series on the down-curved apical portion of the mandible. Antennae six-segmented, the second and third funicular segments reduced. Antennal scrobes present above the eyes. Dorsum of alitrunk without sutures; propodeum armed with a pair of small teeth subtended by a lamella running the height of the declivity. Petiole and postpetiole with well developed spongiform appendages.

Clypeus smooth and shining with abundant simple setae, rest of head reticulate-punctate. Dorsum of alitrunk, postpetiole and first gastral segment mostly smooth and shiny, the last with distinct longitudinal striations.

Minute (2 mm or less) brown-black ants found as yet only in Berlese funnel samples of forest leaf-litter in West Africa.

#### *EPITRITUS* Emery

*Epitritus* Emery, 1869, *Boll. Soc. ent. Ital.* **1** : 136. Type-species: *Epitritus argiolus* Emery, 1869, loc. cit., by monotypy.

Mandibles elongate with 0-1 preapical teeth. Apical armament consisting of a long dorsal spiniform tooth subtended by a vertical series of denticulae or by the denticulae alone. Labrum projecting anteriorly between the mandibles as a biconical structure. Antennae 4- or 6-segmented, the scape lobiform basally. Antennal scrobes present above the reduced eyes. Promesonotal suture represented by a weak impression or absent, similarly with the metanotal groove, which is however usually more distinct than the promesonotal suture. Spongiform appendages of pedicel greatly reduced or absent. Head with numerous large orbicular hairs. Sculpture finely reticulate-punctate.

Minute ants, 1.2-2.2 mm total length.

Three West African species are known, one from the savannah region of Northern Nigeria, the other two from Eastern Ghana, in the forest zone. The savannah species nests in rotten wood which is probably true of the forest forms, known at present only from Berlese funnel samples of leaf-litter.

#### *MICCOSTRUMA* Brown

*Miccostruma* Brown, 1948, *Trans Am. ent. Soc.* **74** : 123. Type-species: *Epitritus mandibularis* Szabo, 1909, *Archiv zool., Bpest* **1** (7) : 1-2, by original designation.

Mandibles subtriangular, serially dentate, concealed for most of their length by the very well developed, anteriorly projecting clypeus, which is fringed anteriorly and laterally by flattened hairs. Antennae 4-segmented; antennal scrobes present. Sutures absent from dorsal alitrunk. Propodeum bidentate, with ventral laminae running down the declivity.

Spongiform appendages of pedicel well developed. Dorsum of head with fine, scattered punctures, hairs absent except on clypeus. Dorsum of alitrunk, pedicel and gaster mostly shiny with small, widely spaced punctures. Base of first gastric tergite with longitudinal striae.

Minute ants, about 2 mm total length. Foraging workers occur in leaf-litter.

### MICRODACETON Santschi

*Microdaceton* Santschi, 1913, *Bull. Soc. ent. Fr.* : 478. Type-species: *Microdaceton exornatum* Santschi, 1913, loc. cit., by monotypy.

Mandibles elongate, linear, without preapical armament; apical armament of three spiniform teeth. Antennae 6-segmented; antennal scrobes absent. Gena in front of eye with a laterally projecting tooth; occipital lobes of head armed with teeth. Promesonotum posteriorly, propodeum and petiole bispinose or bidentate; postpetiole with lateral alar appendages.

Uncommon. Recovered from leaf-litter by Berlese funnel extraction and also from soil-pockets on trees.

### QUADRISTRUMA Brown

*Quadristruma* Brown, 1949, *Trans. Am. ent. Soc.* **75** : 47. Type-species: *Epitritus emmae* Emery, 1890, *Boll. Soc. ent. Ital.* **22** : 70, by original designation.

Mandibles elongate, linear, strongly curved; preapical armament a single long, spiniform tooth, apical armament a fork of two teeth. Labrum not projecting between mandibles as a biconical structure. Antennae 4-segmented; antennal scrobes present. Head with orbicular hairs present. Sculpture a fine puncto-reticulation, first gastral segment shiny except for basigastric costulae.

*Q. emmae* (Emery), a pantropical tramp species, is here recorded for the first time from West Africa. A single alate female was taken on a sticky trap hung from a cocoa tree (*Theobroma cacao* L.) at Bunso, Eastern Region of Ghana, in early October, 1969. Previously Brown (1954) had indicated that *Quadristruma* was most likely of African origin and its presence on the continent is now confirmed.

### SERRASTRUMA Brown

*Serrastruma* Brown, 1948, *Trans. Am. ent. Soc.* **74** : 107 [as a subgenus of *Smithistruma*]. Type-species: *Strumigenys simoni* Emery, 1895, *Annls Soc. ent. Fr.* **63** : 42, by original designation. *Serrastruma* Brown; Brown, 1949, *Mushi* **20** : 6. [Raised to genus.]

Mandibles elongate triangular, serially denticulate, with more than twenty denticulae, the basal 4-8 of which may be much larger than those preceding. Antennae 6-segmented, the second and third segments of the funiculus reduced; antennal scrobes present. Promesonotal suture represented by a weak impression or absent. Sometimes pronotum separated from mesonotum by a change in sculpture. Metanotal groove impressed; propodeum armed with a pair of teeth, may be reduced. Spongiform appendages of pedicel usually reduced.

Small yellow-brown ants nesting in rotten wood and foraging there and in leaf-litter. One species, *S. maynei* (Forel), is subarbooreal, nesting in small rot-holes in the trunks and branches of low trees. This genus and *Strumigenys* constitute the most common members of the tribe Dacetini in West Africa.

**SMITHISTRUMA** Brown

*Smithistruma* Brown, 1948, *Trans Am. ent. Soc.* **74** : 104. Type-species: *Strumigenys pulchella*

Emery, 1895, *Zool. Jb. Syst.* **8** : 327, by original designation.

*Cephaloxys* F. Smith, 1864, *J. Proc. Linn. Soc.* **8** : 76, nom. preocc.

Mandibles triangular, armed with 10 or less small teeth or denticulae. Antennae 6-segmented, the second and third funicular segments reduced, may be very small; antennal scrobes present. Head often very much elongated. Promesonotal suture absent or marked by a weak impression; metanotal groove weakly or not impressed. Spongiform appendages of pedicel usually well developed.

Uncommon, nesting in rotten twigs or in compressed leaf-litter, occasionally directly into soil at the bases of trees. Most workers are retrieved from Berlese funnel samples of leaf-litter.

**STRUMIGENYS** F. Smith

*Strumigenys* F. Smith, 1860, *J. ent. London* **1** : 72. Type-species: *Strumigenys mandibularis*

F. Smith, 1860, loc. cit., by monotypy.

*Labidogenys* Roger, 1862, *Berl. ent. Z.* **6** : 249. Type-species: *Labidogenys lyroessa* Roger,

1862, op. cit. : 251, by monotypy.

*Pyramica* Roger, 1862, *Berl. ent. Z.* **6** : 251. Type-species: *Pyramica gundlachi* Roger, 1862,

op. cit. : 253, by monotypy.

*Proscopomyrmex* Patrizi, 1946, *Boll. Ist. ent. Univ. Bologna* **15** : 294. Type-species: *Proscopomyrmex*

*londianensis* Patrizi, 1946, op. cit., : 295, by original designation.

*Eneria* Donisthorpe, 1948, *Ann. Mag. nat. Hist.* (11) **14** : 598. Type-species: *Eneria excisa*

Donisthorpe, 1948, loc. cit., by original designation.

Mandibles elongate, linear; preapical armament usually of two teeth on the distal portion of the blade, occasionally with one tooth missing from one of the blades. Apical armament of a fork of two spiniform teeth, with or without intercalary denticles. Antennae 6-segmented, the second and third funicular segments reduced, sometimes so reduced that the antennae appears four-segmented. Antennal scrobes present. Often the ventrolateral margin of the head is excised in front of the eye forming the characteristic preocular notch of *S. rogeri* Emery and allies.

Nests in rotten wood, leaf-litter, or directly into hard-packed earth. Two species are arboreal and nest in rot-holes in the trunks and branches of low trees. The smaller species often nest in small twigs in the leaf-litter or in compressed leaf-mould and are quite common in Berlese funnel samples from the forest zone.

**TRICHOSCAPA** Emery

*Trichoscapa* Emery, 1869, *Annali Accad. Aspir. Nat. Napoli* (2) **2** : 24 [as a subgenus of *Strumigenys*]. Type-species: *Strumigenys (Trichoscapa) membranifera* Emery, 1869, loc. cit., by monotypy.

*Trichoscapa* Emery; Brown, 1948, *Trans Am. ent. Soc.* **74** : 112-114. [Raised to genus.]

Mandibles triangular with strong horizontal basal borders which are not covered by the clypeus at full closure. Antennae 6-segmented; antennal scrobes present. Head devoid of hairs except for two on the posterodorsal surface and five or six on each antennal scape. Sides of pronotum strongly marginate.

A tramp ant spread by human commerce, *T. membranifera* Emery occurs in many parts of the tropics and warm temperate zones. Brown (1949a) states that the

species is probably of African origin, but the species has not yet been recorded from Africa. Wilson & Taylor (1967) report that 'The species has an ecological amplitude unusual for a dacetine, nesting in major habitats from dense woodland to dry, open cultivated fields.' In view of the above, *Trichoscapa* is included in the present work.

### Tribe LEPTOTHORACINI

#### ADELOMYRMEX Emery

*Adelomyrmex* Emery, 1897, *Természetr. Fuz.* **20** : 590. Type-species: *Adelomyrmex biroi* Emery, 1897, loc. cit., by monotypy.

Mandibles subtriangular, dentate and with a single tooth on the basal internal margin. Maxillary palp with a single segment (Gotwald, 1969). Median portion of clypeus projecting over the basal borders or the mandibles when fully closed. Antennae 12-segmented with a funicular club of two segments, of which the apical segment is much the larger. Eyes small, situated just anterior to the midline of the side of the head. Promesonotal suture absent; metanotal groove impressed. Propodeum armed with a pair of spines.

Recovered from Berlese funnel samples of leaf-litter from the forest zone, it is probable that this genus has been spread by human commerce from the Papuan region to West Africa.

#### LEPTOTHORAX Mayr

*Leptothorax* Mayr, 1855, *Verh. zool.-bot. Ges. Wien* **5** : 431. Type-species: *Formica acervorum* Fabricius, 1804, *Syst. Piez.* : 407, by designation of Wheeler, 1911.

*Goniothorax* Emery, 1896, *Boll. Soc. ent. Ital.* **28** : 26 [as a subgenus of *Leptothorax*], nom. preocc.

*Caulomyrma* Forel, 1914, *Bull. Soc. vaud. Sci. nat.* **50** : 233 [as a subgenus of *Leptothorax*]. Type-species: *Leptothorax echinatinodis* Forel, 1886, *Annl. Soc. ent. Belg.* **30** : 48, by original designation.

*Limmomyrmex* Arnold, 1948, *Occ. Pap. natn. Mus. Sth. Rhodesia* **2** (14) : 222. Type-species: *Limmomyrmex stramineus* Arnold, 1948, op. cit. : 223, by original designation.

Median portion of clypeus projecting over basal borders of mandibles as a broad, arcuate lobe; the posterior margins of the lateral portions of the clypeus not raised into a ridge in front of the antennal insertions. Antennae 12-segmented with a 3-segmented club; antennal scrobes absent. Eyes well developed, situated at about the midlength of the side of the head. Anterodorsal pronotal angles acute, giving a square shouldered appearance in dorsal view. Promesonotal suture absent, metanotal groove absent to weakly impressed. Propodeum bidentate or bispinose. Petiole with a very short, thick anterior peduncle. Erect setae on all dorsal surfaces of body short, thick and blunt.

Nests in rotten wood, usually embedded in leaf-litter. Foragers are found in leaf-litter, log-mould, or more rarely running about on open ground.

Superficially resembling some species of *Tetramorium*, *Leptothorax* may be distinguished by a combination of the characters noted above and by the fact that in *Tetramorium* the sting is equipped apicodorsally with a translucent, triangular lamelliform appendage, absent in *Leptothorax*.

**MACROMISCHOIDES** Wheeler

*Macromischoides* Wheeler, 1920, *Psyche, Camb.* **27** : 53. Type-species: *Macromischa aculeata* Mayr, 1866, *Sber. Akad. Wiss. Wien* **53**(1) : 507, by original designation.

Mandibles subtriangular with 9 to 11 teeth of varying size. Palp formula 3,2. Head narrowed in front, broadening behind to the large, protuberant eyes and narrowing posterior to the eyes. Antennae 12-segmented with a club of three segments; the scape very long, easily surpassing the occipital margin. Pronotum with a small, obtuse tubercle at each side. Promesonotal suture absent; metanotal groove impressed. Propodeum with a pair of long acute spines. Petiole with a long narrow anterior peduncle. Body with numerous long, fine pointed setae.

Arboreal, constructing nests of vegetable fragments attached to the ventral surfaces of leaves or in the axils of larger leaves. Predacious, principally nocturnal ants.

Tribe **MELISSOTARSINI****MELISSOTARSUS** Emery

*Melissotarsus* Emery, 1877, *Annali Mus. civ. Stor. nat. Giacomo Doria.* **9** : 378. Type-species: *Melissotarsus beccarii* Emery, 1877, op. cit. : 379, by monotypy.

Antennae 6-segmented with a two-segmented club, scapes very short, extending about half the distance from their insertions to the occipital margin. Antennal scrobes absent. Eyes well developed, situated anterolaterally and noticeably longer than broad. Dorsum of alitrunk devoid of sutures, smoothly convex in profile; propodeum unarmed. Postpetiole very broadly attached to gaster posteriorly. Coxae of middle and hind legs very large, much larger than fore coxae. Basal (first) segment of tarsi enlarged, as broad as or broader than the tibiae; remaining tarsal segments small.

These uncommon ants nest under the bark of trees, usually some distance above the ground. They are sluggish and often feign death when disturbed, and are only rarely seen outside the nest during the day.

Tribe **MERANOPLINI****CALYPTOMYRMEX** Emery

*Calyptomyrmex* Emery, 1887, *Annali Mus. civ. Stor. nat. Giacomo Doria.* **25** : 471. Type-species: *Calyptomyrmex beccarii* Emery, 1887, op. cit. : 472, by monotypy.

*Weberidris* Donisthorpe, 1948, *Entomologist's mon. Mag.* **84** : 281. Type-species: *Weberidris rufobrunnea* Donisthorpe, 1948, loc. cit., by original designation.

Median portion of clypeus vertical, projecting anterodorsally as a bilobed structure, overhanging the mandibles. Antennae 11- or 12-segmented, with a three-segmented club. Antennal scrobes present above the eyes, very deep and capable of containing the whole antenna. Dorsum of alitrunk devoid of sutures, promesonotum convex in profile, the propodeum sloping (sometimes steeply) and armed with a pair of spines or teeth. Dorsal surfaces of body usually with spatulate or otherwise bizarre setae.

Cryptic species, usually nesting in very rotten wood deeply embedded in the ground, or in compressed leaf-litter. Foragers are found in log- and leaf-mould and occasionally in the soil beneath rotten twigs and stones.

**MERANOPLUS** F. Smith

*Meranoplus* F. Smith, 1854, *Trans ent. Soc. Lond.* (2) **2** : 224. Type-species: *Cryptocerus bicolor* Guérin, 1845, *Iconog. Règn. Anim.* **7** : 425, by designation of Bingham, 1903.  
*Cryptocephalus* Lowne, 1865, *Entomologist* **2** : 336. Type-species: *Cryptocerus pubescens* F. Smith, 1853, *Trans ent. Soc. Lond.* (2) **2** : 223, by monotypy.

Antennae 9-segmented with a 3-segmented club. Antennal scrobes present, deep; the eyes well developed and situated towards the posterior end of the scrobe on its ventral border. Promesonotum fused, strongly margined all round and projecting posteriorly as a shelf, overhanging the propodeum which is vertical or nearly so. Posterior margin of the promesonotal shelf armed with a number of teeth or spines. Propodeum unarmed or bidentate or bispinose. Petiole and postpetiole squamiform. Head, alitrunk and gaster clothed with abundant long, soft setae, giving the ant a furry appearance to the naked eye.

The forest species usually nest directly into the ground or amongst the roots of low plants, and forage in the leaf-litter and below rotten logs. Savannah species adopt similar nesting sites but are much more active in the open and are often to be seen running on termite mounds.

Tribe **MYRMECININI****ATOPOMYRMEX** E. André

*Atopomyrmex* E. André, 1889, *Revue Ent.* **8** : 226. Type-species: *Atopomyrmex mocquersyi* E. André, 1889, op. cit. : 227, by monotypy.

Polymorphic. Palp formula 4,3. Antennae 12-segmented with a club of three segments. Antennal scrobes absent. Eyes well developed, flat, situated on the posterior half of the sides of the head. Pronotum marginate laterally, the promesonotal suture absent. Mesonotum bituberculate behind. Metanotal groove impressed; propodeum armed with a pair of long spines. Petiole armed with a pair of spines above.

Arboreal ants, nesting in the wood of large trees, usually a considerable distance above the ground.

**PRISTOMYRMEX** Mayr

*Pristomyrmex* Mayr, 1866, *Verh. zool.-bot. Ges. Wien* **16** : 903. Type-species: *Pristomyrmex pungens* Mayr, 1866, op. cit. : 904, by monotypy.

*Odontomyrmex* E. André, 1905, *Revue Ent.* **24** : 207 [as a subgenus of *Pristomyrmex*]. Type-species: *Pristomyrmex (Odontomyrmex) quadridentatus* E. André, 1905, loc. cit., by monotypy.

*Hylidris* Weber, 1941, *Ann. ent. Soc. Am.* **34** : 190. Type-species: *Hylidris myersi* Weber 1941, loc. cit., by original designation.

*Dodous* Donisthorpe, 1946, *Proc. R. ent. Soc. Lond.* (B) **15** : 145. Type-species: *Dodous trispinosus* Donisthorpe, 1946, loc. cit., by original designation.

Palp formula 1,3 or 2,3. Median portion of clypeus with a number of blunt teeth on the anterior margin; lateral portions reduced to a thin raised strip in front of the antennal insertions. Antennae 11-segmented with a 3-segmented club. Eyes medium or small, situated at about the midlength of the head; the head itself broader in front than behind, the sides convex. Dorsum of alitrunk devoid of sutures. Pronotum usually armed with a pair of spines of blunt tubercles, very rarely unarmed. Propodeum bispinose or bidentate. Sting simple, without a spatulate appendage.

Nests in rotten wood or fallen twigs in the leaf-litter; foraging is carried out in the leaf-litter or beneath the bark of fallen trees. This genus may be confused

with some species of the genus *Xiphomyrmex* which are superficially similar but in *Xiphomyrmex* the clypeal margin and pronotum are unarmed, and the sting has a spatulate apical portion.

### TERATANER Emery

*Terataner* Emery, 1912, *Annls Soc. ent. Belg.* **61** : 103. Type-species: *Atopomyrmex foreli* Emery, 1899, *Boll. Soc. ent. Ital.* **31** : 274, by original designation.

Antennae 12-segmented with a three-segmented club. Antennal scrobes absent. Palp formula 4.3. Pronotum anteriorly, and promesonotum laterally marginate. Promesonotal suture absent but lateral margination broken at junction of pro- and mesonotum. Metanotal groove weakly impressed; propodeum unarmed, metapleural lobes present. Petiole with a pair of teeth above.

Arboreal, nesting in the trunk or branches of living trees; foraging wholly arboreal, the ants of this genus are never found on the ground under normal circumstances.

### Tribe MYRMICARIINI

#### MYRMICARIA Saunders

*Myrmecaria* Saunders, 1841, *Trans ent. Soc. Lond.* **3** : 57. Type-species: *Myrmecaria brunnea* Saunders, 1841, loc. cit., by monotypy.

*Heptacondylus* F. Smith, 1857, *J. Proc. Linn. Soc.* **2** : 71. Type-species: *Heptacondylus subcarinatus* F. Smith, 1857, op. cit.: 73, by designation of Wheeler, 1911.

*Physatta* F. Smith, 1857, *J. Proc. Linn. Soc.* **2** : 77. Type-species: *Physatta dromedarius* F. Smith, 1857, op. cit.: 78, by monotypy.

Palp formula 3.3. Antennae 7-segmented, indistinctly clubbed. Frontal carinae widely separated; antennal scrobes absent. Eyes placed behind midlength of head. Anterolateral angles of pronotum drawn out into a tooth on each side. Promesonotal suture represented by a weak impression which does not break the sculpture. Mesonotum bluntly bituberculate behind, sharply angled, the posterior portion more or less vertical. Metanotal groove deeply impressed; propodeum bispinose. Petiole with a long anterior peduncle. Sting coarse, somewhat flattened from side to side. Head, body and appendages with numerous long, coarse, darkly coloured setae.

Mostly savannah species. Nests are made directly into the earth, often with long sunken runways visible on the surface of the ground. The ants are active in brightest sunlight and are general predators and scavengers. In life the peduncle of the petiole is held almost vertically so that the gaster points almost straight down from base to apex, giving the ant a peculiarly foreshortened appearance.

### Tribe MYRMICINI

#### CRATOMYRMEX Emery

*Cratomyrmex* Emery, 1891, *Annls Soc. ent. Fr.* **60** : 572. Type-species: *Cratomyrmex regalis* Emery, 1819, loc. cit., by monotypy.

Answering to the description of *Messor* below but with the tibial spurs of the middle and hind legs pectinate.

The genus is confined to savannah regions, having the same nesting sites and habits as *Messor*.

Tribe **OCHETOMYRMICINI****WASMANNIA** Forel

*Wasmannia* Forel, 1893, *Trans. ent. Soc. Lond.* : 383. Type-species: *Tetramorium auropunctatum* Roger, 1863, *Berl. ent. Z.* **7** : 182, by designation of Wheeler, 1911.

*Hercynia* Enzmann, 1947, *Jl N.Y. ent. Soc.* **55** : 43. Type-species: *Hercynia panamana* Enzmann, 1947, op. cit. : 44, by original designation.

Minute ants, 2 mm or less in total length. Palp formula 3,2 (Gotwald, 1969). Antennae 11-segmented with a three-segmented club. Antennal scrobes present, bounded below by a weak longitudinal carina running above the eye. Anterodorsal angles of the pronotum acute; pronotum strongly marginate anteriorly. Promesonotal suture absent; metanotal groove weakly impressed. Propodeum bispinose; metapleural lobes present.

A single species, *W. auropunctata* (Roger,) of this neotropical genus has been introduced into Cameroun, where in places it is quite successful. It has not yet been reported as being successfully introduced into West Africa. The minute workers forage arboreally and tend aphids and coccids as well as being active predators.

Tribe **PHEIDOLINI****MESSOR** Forel

*Messor* Forel, 1890, *Annls Soc. ent. Belg.* **34** C.R. : 68 [as a subgenus of *Alphaenogaster*]. Type-species: *Formica barbara* Linnaeus, 1767, *Syst. Nat.* ed. **12**,2 : 962, by designation of Bingham 1903.

*Messor* Forel; Emery, 1908, *Dt. ent. Z.* : 437. [Raised to genus.]

Polymorphic. Mandibles strongly curved, usually dentate in smaller workers, more or less edentate in larger. Head as broad as or broader than long; eyes situated in the middle of the sides of the head. Antennae 12-segmented, without a differentiated club. Gular surface of head with a psammophore. Promesonotal suture present; metanotal groove impressed. Pronotum and mesonotum together dome-shaped in profile, the propodeum more or less flat and considerably depressed, on a much lower level than the apex of the promesonotal 'dome'. Propodeum with a pair of blunt teeth. Node of petiole emarginate above in large workers, this character may be reduced or absent in small workers. Spurs of middle and hind tibiae simple.

Restricted to the savannah regions of West Africa and also occurring on the coastal plains. Nests are made directly into the earth in open ground, and have a crater-like entrance.

**PHEIDOLE** Westwood

*Pheidole* Westwood, 1840, *Ann. Mag. nat. Hist.* **6** : 87. Type-species: *Atta providens* Sykes, 1835, *Trans. ent. Soc. Lond.* **1** : 103, by designation of Bingham, 1903.

*Leptomyrma* Motschulsky, 1863, *Bull. Soc. Nat. Moscou* **36** : 17. Type-species: *Leptomyrma gracilipes* Motschulsky, 1863, loc. cit., by monotypy.

*Epipheidole* Wheeler 1903, *Bull. Am. Mus. nat. Hist.* **19** : 664. Type-species: *Epipheidole inquilina* Wheeler 1903, loc. cit., by monotypy.

Dimorphic, rarely with intermediates. Major worker (soldier) with head massive, the occipital margin deeply impressed in the middle. Mandibles large, heavy, strongly curved, each usually armed with three teeth, of which two are situated apically and one basally on the masticatory



margin and separated by a diastema. Palp formula 2,2 in species examined. Antennae 12-segmented with a 3-segmented club. Eyes situated in front of the midlength of the side of the head. Promesonotal suture absent or represented by an impressed line, rarely present. Metanotal groove deeply impressed. Propodeum armed with a pair of spines or teeth; petiole usually emarginate above.

Minor worker with occipital margin of head shallowly emarginate or more usually with the sides of the head converging behind the eyes so that the occipital margin is very short. Mandibles usually with two or three large teeth apically followed by a row of denticulae of uneven sizes. Palp formula and antennae as in major worker but eyes usually set just in front of midlength of the head. Alitrunk and pedicel as above.

A very common genus in West Africa, present throughout the region and nesting in rotten wood, directly into open ground, under stones and logs, amongst the roots of plants and occasionally beneath the bark of standing trees or in rot-holes in tree trunks.

### Tribe SOLENOPSIDINI

#### CAREBARA Westwood

*Carebara* Westwood, 1841, *Ann. Mag. nat. Hist.* 6 : 86. Type-species: *Carebara lignata* Westwood, 1841, loc. cit., by monotypy.

Mandibles with five or six teeth. Palp formula 2,2 (Ettershank, 1966). Antennae 9-segmented with a club of two segments. Clypeus bicarinate; eyes completely absent. Promesonotal suture absent; metanotal groove impressed. Propodeum unarmed.

Workers minute, usually less than 2 mm total length; depigmented, usually yellow in colour.

The ants of this genus are wholly hypogaeic and are nearly always found with termites. Their nests are usually built in the walls of termitaria of species which do not show a mound above ground-level. Occasional workers are found in Berlese funnel samples. At the times when alate females and males are produced, the workers emerge in hundreds onto the surface of the ground.

#### DIPLOMORIUM Mayr

*Diplomorium* Mayr, 1901 *Annl. naturh. Mus. Wien* 16 : 16. Type-species: *Diplomorium longipenne* Mayr, 1901, op. cit. : 18, by monotypy.

*Bondroitia* Forel, 1911, *Bull. Soc. vaud. Sci. nat.* 47 : 398 [as a subgenus of *Diplomorium*]. Type-species: *Diplomorium lujae* Forel, 1909, *Annl. Soc. ent. Belg.* 53 : 72, by monotypy.

As *Monomorium* below but always with the antennae 11-segmented and the median portion of the clypeus swollen but not bicarinate. Palp formula 2,2 (Ettershank, 1966).

The species nest in rather dry rotten wood.

#### MONOMORIUM Mayr

*Monomorium* Mayr, 1855, *Verh. zool.-bot. Ges. Wien* 5 : 452. Type-species: *Monomorium minutum* Mayr, 1855, op. cit. : 453, by monotypy.

*Phacota* Roger, 1862, *Berl. ent. Z.* 6 : 260. Type-species: *Phacota sicheli* Roger, 1862, op. cit. : 262, by monotypy.

*Trichomyrmex* Mayr, 1865, *Reise der . . . Fregatte Novara, Zool.* 2 (1) : 19. Wien. Type-species: *Trichomyrmex rogeri* Mayr, 1865, loc. cit., by monotypy.

- Lampromyrmex* Mayr, 1868, *Beitr. Naturk. Preuss.* **1** : 92. Type-species: *Lampromyrmex gracillimus* Mayr, 1868, nom. preocc. [= *Monomorium mayrianum* Wheeler, 1914, *Schr. phys.-ökon. Ges. Königsb.* **55** : 45. (fossil), nom. substit.], by monotypy.
- Holcomyrmex* Mayr, 1878, *Verh. zool.-bot. Ges. Wien* **28** : 671. Type-species: *Holcomyrmex scabriceps* Mayr, 1878, op. cit. : 672, by designation of Bingham, 1903.
- Epoecus* Emery, 1892, *Annls Soc. ent. Fr.* **61** : 272. Type-species: *Epoecus pergandei* Emery, 1892, op. cit. : 273, by monotypy.
- Wheeleria* Forel, 1905, *Annls Soc. ent. Belg.* **49** : 171, nom. preocc. Type-species: *Wheeleria santschii* Forel, 1905, loc. cit., by monotypy.
- Wheeleriella* Forel, 1907, *Int. Sci. Revue* **4** : 145, nom. substit. pro. *Wheeleria* Forel.
- Epixenus* Emery, 1908, *Dt. ent. Z.* : 556. Type-species: *Monomorium advena* Brown and Wilson, 1957, *Ent. News* **68** : 244, nom. substit. pro *Epixenus andrei* Emery, 1908 (nec Saunders, 1890).
- Xeromyrmex* Emery, 1915, *Bull. Soc. ent. Fr.* : 190 [as a subgenus of *Monomorium*]. Type-species: *Formica salomonis* Linnaeus, 1758, *Syst. Nat.* ed. **10** : 580, by original designation.
- Parholcomyrmex* Emery, 1915, *Bull. Soc. ent. Fr.* : 190 [as a subgenus of *Monomorium*] [= *Paraholcomyrmex*, variant spelling]. Type-species: *Myrmica gracillima* F. Smith, 1861, *J. Proc. Linn. Soc.* **5** : 34, by original designation.
- Corynomyrmex* Viehmeyer, 1916, *Arch. Naturgesch.* **81** : 134 [as a subgenus of *Monomorium*]. Type-species: *Monomorium (Corynomyrmex) hospitum* Viehmeyer, 1916, loc. cit., by monotypy. Provisional synonymy of Ettershank, 1966, *Aust. J. Zool.* **14** : 82.
- Isolcomyrmex* Santschi, 1917, *An. Soc. cient. argent.* **84** : 296 [as a subgenus of *Monomorium*]. Type-species: *Monomorium santschianum* Ettershank, 1966, nom. substit. pro *Holcomyrmex santschii* Forel, 1907, nom. preocc.
- Paraphacota* Santschi, 1919, *Bull. Soc. ent. Fr.* : 91. Type-species: *Phacota noualhieri* Emery, 1895, *Mem. R. Accad. Sci. Ist. Bologna* **5** : 299, by original designation.
- Equestrinessor* Santschi, 1919, *Bull. Soc. ent. Fr.* : 92. [as a subgenus of *Monomorium*] [= *Equesimessor*, variant spelling]. Type-species; *Holcomyrmex chobauti* Emery, 1897, *Bull. Soc. ent. Fr.* : 418, by designation of Donisthorpe, 1943, *Ann. Mag. nat. Hist.* (11) **10** : 644.
- Xenhyboma* Santschi, 1919, *Boln Soc. esp. Hist. nat.* **19** : 405. Type-species: *Xenhyboma mystes* Santschi, 1919, loc. cit., by monotypy. Provisional synonymy of Ettershank, 1966, *Aust. J. Zool.* **14** : 82.
- Ireneidris* Donisthorpe, 1943, *Entomologist's mon. Mag.* **79** : 81. Type-species: *Ireneidris myops* Donisthorpe, 1943, loc. cit. [= *Monomorium talpa* Emery, 1911, *Nova Guinea* **9** : 252], by original designation.

Median portion of clypeus with two distinct longitudinal carinae, the clypeus sometimes concave between the carinae on the anterior margin and projecting as a pair of blunt teeth. Palp formula 1,2 or 2,2 (Ettershank, 1966). Eyes present. Antennae 11- or 12-segmented with a 3-segmented club. Promesonotal suture absent on dorsum of alitrunk; metanotal groove impressed. Propodeum unarmed; petiole pedunculate, the node high and rounded.

The majority of West African species of this very common genus are unsculptured, smooth and shiny ants, but some have a universal fine dense puncturation or reticulo-puncturation. Nests are made in rotten wood, under stones or directly into the earth. *M. pharaonis* (L.) is a common house-inhabiting species.

### OLIGOMYRMEX Mayr

- Oligomyrmex* Mayr, 1867, *Tijdschr. Ent.* **10** : 110. Type-species: *Oligomyrmex concinnus* Mayr, 1867, op. cit. : 111, by monotypy.
- Aeromyrma* Forel, 1891, *Annls Soc. ent. Belg.* **35** : 307. Type-species: *Aeromyrma nosindambo* Forel, 1891, op. cit. : 199, by monotypy.

- Aneleus* Emery, 1900, *Termeszetr. Füz.* **23** : 327 [as a subgenus of *Pheidologeton*.] Type-species: *Solenopsis similis* Mayr, 1862, *Verh. zool.-bot. Ges. Wien* **12** : 751, by designation of Wheeler, 1911.
- Erebomyrma* Wheeler, 1903, *Biol. Bull. mar. biol. Lab. Woods Hole* **4** : 138. Type-species: *Erebomyrma longi* Wheeler, 1903, op. cit. : 140, by monotypy.
- Lecanomyrma* Forel, 1913, *Zool. Jb. Syst.* **36** : 56 [as a subgenus of *Pheidologeton*]. Type-species: *Pheidologeton (Lecanomyrma) butteli* Forel, 1913, loc. cit., by designation of Emery, 1922.
- Octella* Forel, 1915, *Ark. Zool.* **9** : 69 [as a subgenus of *Oligomyrmex*]. Type-species: *Oligomyrmex (Octella) pachycerus* Forel, 1915, loc. cit., by original designation.
- Spelaeomyrmex* Wheeler, 1922, *Am. Mus. Novit.* no. **45** : 9. Type-species: *Spelaeomyrmex urichi* Wheeler, 1922, loc. cit., by original designation.
- Hendecatella* Wheeler, 1927, *Boll. Lab. Zool. gen. agr. Portici* **20** : 93 [as a subgenus of *Oligomyrmex*] Type-species: *Oligomyrmex (Hendecatella) capreolus* Wheeler, 1927, loc. cit., by monotypy.
- Solenops* Karawajew, 1930, *Zool. Anz.* **92** : 207 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis (Solenops) weyeri* Karawajew, 1930, loc. cit., by monotypy (nec *Solenops* Dufour, 1820, Arachnida).
- Sporocleptes* Arnold, 1948, *Occ. Pap. natn. Mus. Sth Rhod.* **2** (14) : 219. Type-species: *Sporocleptes nicotiana* Arnold, 1948, loc. cit., by original designation.
- Crateropsis* Patrizi, 1948, *Boll. Ist. Ent. Univ. Bologna* **17** : 174 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis (Crateropsis) elementeitae* Patrizi, 1948, loc. cit., by original designation. Provisional synonymy of Ettershank, 1966, *Aust. J. Zool.* **14** : 120.
- Nimbamyрма* Bernard, 1952, *Mém. Inst. franç. Afr. noire* **19** : 240. Type-species: *Nimbamyрма villiersi* Bernard, 1952, op. cit. : 241, by monotypy. Provisional synonymy of Ettershank, 1966, *Aust. J. Zool.* **14** : 120.

Median portion of clypeus longitudinally bicarinate. Palp formula 2,2 in major workers (Ettershank, 1966). Antennae 9-, 10- or 11- segmented with a club of two segments. Eyes present, small. Promesonotal suture absent from dorsum of alitrunk; metanotal groove impressed. Propodeum armed with a pair of teeth or at least sharply angulate. Dimorphic species without intermediates, the major workers with massive heads.

Ants of this genus are small to minute and usually nest in rotten wood to which the bark is still adherent. Workers are quite common in Berlese samples of leaf litter and have been found in epiphytic moss on trees.

### PAEDALGUS Forel

- Paedalgus* Forel, 1911, in Escherich, *Termitenleben auf Ceylon* : 217. Jena. Type-species: *Paedalgus escherichi* Forel, 1911, op. cit. : 218, by monotypy.

Mandibles with four teeth. Palp formula 2,2, (Ettershank, 1966). Clypeus longitudinally bicarinate. Eyes present, minute, of two ommatidia only. Antennae 9-segmented with club of two segments. Promesonotal suture absent; metanotal groove not impressed. Dorsum of alitrunk with sharp lateral margins; propodeum unarmed.

Minute yellowish ants nesting in the walls of termitaria or rotten wood infested by termites.

### PHEIDOLOGETON Mayr

- Pheidologeton* Mayr, 1862, *Verh. zool.-bot. Ges. Wien* **12** : 750. Type-species: *Oecodoma diversa* Jerdon, 1851, *Madras J. Lit. & Sci.* **17** : 109, by designation of Bingham, 1903.

*Amauromyrmex* Wheeler, 1929, *Am. Mus. Novit.* no. 349 : 1. Type-species: *Amauromyrmex speculifrons* Wheeler, 1929, loc. cit. [= *Pheidologeton silenus* (F. Smith, 1858)], by original designation.

*Iridisella* Santschi, 1937, *Annls Soc. ent. Belg.* 77 : 372. Type-species: *Pheidologeton dentiviris* Forel, 1913, *Arch. Naturgesch.* 79 : 192, by original designation.

Polymorphic. Mandibles of major workers often edentate or with reduced, rounded teeth; minor workers with five or six teeth. Palp formula 2,2 (Ettershank, 1966). Clypeus not bicarinate. Eyes present. Antennae 11-segmented with a 2-segmented club. Promesonotal suture absent in minor workers, becoming increasingly developed with increased worker size. Metanotal groove impressed; propodeum bispinose.

Nests in and under rotten logs; uncommon in West Africa.

### SOLENOPSIS Westwood

*Solenopsis* Westwood, 1841, *Ann. Mag. nat. Hist.* 6 : 87. Type-species: *Solenopsis mandibularis* Westwood, 1841 [= *Atta geminata* Fabricius, 1804, *Syst. Piez.* : 243], by monotypy.

*Diplophoptrum* Mayr, 1855, *Verh. zool.-bot. Ges. Wien* 5 : 449. Type-species: *Formica fugax* Latreille, [1798], *Essai . . . Fourmis de la France* : 46, Brive, by monotypy.

*Synsolenopsis* Forel, 1918, *Bull. Soc. vaud. Sci. nat.* 52 : 155 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis bruchiella* Emery, 1921, *Genera Insect.* Myrmicinae, fasc. 174A : 199, nom. substit., pro *Solenopsis bruchi* Forel, 1918 (nec *Solenopsis bruchi* Forel, 1912), by monotypy.

*Diagyne* Santschi, 1923, *Revue suisse Zool.* 30 : 267 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis succinea* Emery, 1890, *Boll. Soc. ent. Ital.* 22 : 52, by original designation.

*Labauchena* Santschi, 1930, *Revta Soc. ent. argent.* 13 : 81. Type-species: *Labauchena daguerrei* Santschi, 1930, loc. cit., by monotypy.

*Euophthalma* Creighton, 1930, *Proc. Am. Acad. Arts Sci.* 66 : 43 [as a subgenus of *Solenopsis*]. Type-species: *Myrmica globularia* F. Smith, 1858, *Cat. Hym. Brit. Mus.* 6 : 131, by original designation.

*Oedaleocerus* Creighton, 1930, *Proc. Am. Acad. Arts Sci.* 66 : 43 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis angulata* Emery, 1894, in von Ihering, *Berl. ent. Z.* 39 : 393, by original designation.

*Bisolenopsis* Kusnezov, 1953, *Acta Zool. lilloana* 13 : 1. Type-species *Bisolenopsis sea* Kusnezov, 1953, loc. cit., by monotypy.

*Paranamyрма* Kusnezov, 1954, *Mems Mus. Entre Rios* 30 : 9. Type-species: *Paranamyрма solenopsidis* Kusnezov, 1954, op. cit. : 12, by monotypy.

*Lilidris* Kusnezov, 1957, *Zool. Anz.* 158 : 268, 274. Type-species: *Lilidris metatarsalis* Kusnezov, 1957, loc. cit., by monotypy.

*Granisolenopsis* Kusnezov, 1957, *Zool. Anz.* 158 : 270, 277 [as a subgenus of *Solenopsis*]. Type-species: *Solenopsis (Granisolenopsis) granivora* Kusnezov, 1957, op. cit. : 278, by monotypy.

Monomorphic or polymorphic. Mandibles with three or four teeth. Palp formula 1,2, the maxillary palp geniculate (Ettershank, 1966). Clypeus strongly longitudinally bicarinate, the median area sharply elevated and deeply inserted between the frontal carinae. Antennae 10-segmented with a 2-segmented club. Promesonotal suture absent from dorsum of alitrunk; metanotal groove impressed; propodeum unarmed.

The genus is represented by only three or four indigenous species in West Africa, which are small yellowish ants nesting in soil at the bases of trees or in the leaf-litter. The species are general scavengers and are often found on dead insects lying in the leaf-litter at the bases of trees. One species, *S. geminata* (Fabricius) has been introduced to West Africa from the neotropical region. It is very common in the Warri Delta in Nigeria, where it is called 'okubrass'.

**SYLLOPHOPSIS** Santschi

*Syllophopsis* Santschi, 1915, *Annls Soc. ent. Fr.* **84** : 259 [as a subgenus of *Monomorium*]. Type-species: *Monomorium modestum* Santschi, 1914, *Meddn Göteborgs Mus. Zool. Afd.* **3** : 17, by monotypy.

*Syllophopsis* Santschi; Santschi, 1921, *Annls Soc. ent. Belg.* **61** : 120. [Raised to genus.]

As *Monomorium* but median portion of clypeus somewhat swollen, without longitudinal carinae. Antennae always 12-segmented with a 3-segmented club.

Tribe **TETRAMORIINI****DECAMORIUM** Forel

*Decamorium* Forel, 1913, *Annls Soc. ent. Belg.* **62** : 121 [as a subgenus of *Tetramorium*]. Type-species: *Tetramorium (Decamorium) decem* Forel, 1913, loc. cit., by monotypy.

*Decamorium* Forel; Wheeler, 1922d, *Bull. Am. Mus. nat. Hist.* **45** : 906. [Raised to genus.]

Mandibles with five to six teeth; palp formula 4,3. Sides of median portion of clypeus and posterior margins of the lateral portions raised, bordering the antennal insertions. Antennae 10-segmented with a 3-segmented club. Antennal scrobes present above the eyes, the ventral margins of the scrobes very poorly defined. Anterodorsal pronotal angles acute; promesonotal suture absent from dorsum of alitrunk. Metanotal groove impressed; propodeum armed with a pair of teeth, metanotal lobes present. Sting with a triangular lamelliform appendage apicodorsally. Femora of legs swollen.

The single species *D. decem* (Forel) nests in rotten logs or twigs buried in the leaf-litter. Foragers often leave the nest and progress through the leaf-litter in single file. The species has been observed preying on termites.

**RHOPTROMYRMEX** Mayr

*Rhoptromyrmex* Mayr, 1901, *Annln naturh. Mus. Wien* **16** : 18. Type-species: *Rhoptromyrmex globulinodis* Mayr, 1901, op. cit. : 20, by designation of Wheeler, 1911.

*Acidomyrmex* Emery, 1915, *Bull. Soc. ent. Fr.* **1915** : 191 [as a subgenus of *Rhoptromyrmex*].

Type-species: *Rhoptromyrmex wroughtonii* Forel, 1902, *Revue suisse. Zool.* **10** : 231, by original designation.

Palp formula 3,2 (Brown, 1964). Posterior margins of lateral portions of clypeus raised into ridges in front of antennal insertions. Antennae twelve-segmented with a three-segmented club. Frontal carinae short, divergent behind; antennal scrobes absent. Sutures absent on dorsum of alitrunk, but metanotal groove usually visible. Propodeum unarmed in African species.

Collections of *Rhoptromyrmex* species in West Africa are uncommon but occasionally occur in leaf-litter samples, usually from the forest zone.

**TETRAMORIUM** Mayr

*Tetramorium* Mayr, 1855, *Verh. zool.-bot. Ges. Wien* **5** : 423. Type-species: *Formica caespitum* Linnaeus, 1758, *Syst. Nat.*, ed. **10** : 581, by designation of Girard, 1879.

*Tetrogmus* Roger, *Berl. ent. Z.* **1** : 10. Type-species: *Tetrogmus caldarius* Roger, 1857, op. cit. : 12 [= *Myrmica simillima* F. Smith, 1851], by monotypy.

Mandibles with three or four large teeth apically, followed by a variable number of denticulae. Palp formula 4,3. Posterior margins of lateral portions of clypeus raised into a ridge bordering

the antennal insertions. Antennae 12-segmented with a 3-segmented club. Antennal scrobes absent to feebly present; the frontal carinae often extended backwards as a pair of diverging rugae which may run to the occipital margin of the head. Anterolateral angles of the pronotum characteristically sharply angulate, giving a square-shouldered appearance in dorsal view. Sutures absent from dorsum of alitrunk, although the metanotal groove is usually impressed. Propodeum armed with a pair of spines or teeth, metapleural lobes present, acute, may project as a pair of spines below those of the propodeum. Sting with an apicodorsal triangular lamelliform appendage. Femora of legs usually distinctly swollen. Setal development not as in *Triglyphothrix* below.

Common ants varying from medium to small in size. Usually nesting in rotten wood or in compressed leaf-litter, but a few species nest directly into open ground, some are arboreal and some are termitolestic. The *T. sericeiventre* Emery group of species includes elongate, long-legged ants making crater nests in open ground. They are mostly confined to savannah but also occur in forest clearings and on paths. *T. termitobium* Emery and allies are small species usually found nesting in rotten logs with termites, or in the walls of termitaria.

### TRIGLYPHOTHRIX Forel

*Triglyphothrix* Forel, 1890, *Annls Soc. ent. Belg.* **34** : 106. Type-species: *Triglyphothrix walshi* Forel, 1890, op. cit. : 107, by monotypy.

As *Tetramorium* above but antennal scrobes usually well developed, deep and divided into upper and lower compartments by a longitudinal ridge. Setae trifold or multifid, best observed by viewing the alitrunk and pedicel in profile at magnifications of 80 × or more. Hairs usually abundant, giving the ant a furry appearance to the naked eye.

In a few species the antennal scrobes are poorly developed but in these the trifold hair character is apparent.

Leaf-litter and ground foraging species nesting directly into the soil or in rotten wood.

### XIPHOMYRMEX Forel

*Xiphomyrmex* Forel, 1887, *Mitt. schweiz. ent. Ges.* **7** : 385 [as a subgenus of *Tetramorium*]. Type-species: *Tetramorium (Xiphomyrmex) kelleri* Forel, 1889, loc. cit., by designation of Wheeler, 1911.

*Xiphomyrmex* Forel; Wheeler, 1922, *Bull. Am. Mus. nat. Hist.* **45** : 906. [Raised to genus.]

As *Tetramorium* above but antennae 11-segmented with a 3-segmented club. Antennal scrobes usually better developed, at least with a distinct dorsal boundary. Palp formula usually 4,3, rarely reduced to 3,3. Sting with a spatulate appendage apically, projecting from the body of the sting at a shallow angle.

A number of species completely lack sculpture and are highly polished, usually jet-black, but most species have the head and alitrunk with some sculpturation. In some species one or both segments of the pedicel may be squamiform, this character usually corresponding to loss of sculpture.

Nests are made in rotten wood and foragers are quite common in the leaf-litter and in log-mould.

## Subfamily DORYLINAE

## Tribe AENICTINI

*AENICTUS* Shuckard

*Aenictus* Shuckard, 1840, *Ann. nat. Hist.* 5 : 266. Type-species: *Aenictus ambiguus* Shuckard, 1840, loc. cit., by original designation.

*Typhlatta* F. Smith, 1857, *J. Proc. Linn. Soc.* 2 : 79. Type-species: *Typhlatta laeviceps* F. Smith, 1857, loc. cit., by monotypy.

*Paraenictus* Wheeler, 1929, *Boll. Lab. Zool. gen. agr. Portici* 24 : 27 [as a subgenus of *Aenictus*]. Type-species: *Aenictus (Paraenictus) silvestrii* Wheeler, 1929, op. cit. : 28, by monotypy.

Palp formula 2,2 (Gotwald, 1969). Posterior margin of clypeus and lobes of frontal carinae raised, forming a ridge around the antennal insertions, which are exposed in dorsal view. Gena laterad of each antennal insertion with a carina of variable length. Antennae ten-segmented. Eyes absent. Dorsum of alitrunk without sutures, metanotal groove usually impressed. Pedicel of two segments, the petiole usually sessile in front. Pygidium not impressed, without teeth or spines.

Small to medium sized ants, yellowish or reddish brown in colour, often with large areas of cuticle unsculptured, especially on the head, pronotum and gaster. The ants follow an 'army ant' lifeway and their narrow marching columns are quite common in the leaf-litter layer. They may also be found in and under rotten logs, under bark, and amongst the roots of trees and bushes.

## Tribe DORYLINI

*DORYLUS* Fabricius

*Dorylus* Fabricius, 1793, *Ent. Syst.* 2 : 365. Type-species: *Vespa helvola* Linnaeus, 1764, *Mus. Ludov. Ulr.* : 412, by designation of Shuckard, 1840, *Ann. nat. Hist.* 5 : 315.

*Sphegomyrmex* Imhoff, 1852, *Verh. naturf. Ges. Basel* 10 : 175. Type-species: *Dorylus nigricans* Illiger, 1802, *Magazin Insectenk.* 1 : 188, by monotypy.

*Cosmaecetes* Spinola, 1853, *Memorie Accad. Sci. Torino* (2) 13 : 70. Type-species: *Cosmaecetes homalinus* Spinola, 1853, op. cit. : 71 [= *Typhlopone fulva* Westwood 1840, *Introd. Class. Insects* 2 : 219], by monotypy.

*Shuckardia* Emery, 1895, *Zool. Jb. Abt. Syst.* 8 : 703, 740. Type-species: *Alaopone abeilli* E. André, 1885 [= *Dorylus atriceps* Shuckard, 1840, *Ann. nat. Hist.* 5 : 323], by original designation.

Polymorphic. Mandibles with apical tooth long and acute, with at least one other tooth on the inner margin, usually with more. Larger workers have fewer teeth than smaller forms. Palp formula 2,2 (Gotwald, 1969). Frontal carinae vertical, the condylar bulbs of the antennae exposed. Antennae 9-, 10- or 11-segmented; eyes absent. Genae not longitudinally carinate. Promesonotal suture present, mobile; metanotal groove absent. Pedicel of a single segment, the first gastral segment somewhat reduced, smaller than the second segment. Pygidium impressed, armed at each side with a tooth or spine.

The larger species, placed in the subgenus *Anomma* Shuckard, are the well known Driver Ants, their trails often being seen crossing paths where covered runways are built by the ants to shield them from direct sunlight.

Numerous species in other subgenera are never seen on the surface of the ground by day. They are found in rotten logs, tree-stumps, leaf-litter and termitaria and occasionally under bark or in the earth beneath stones and logs. All species are carnivorous and indulge in nomadism and group predation.

Subfamily **LEPTANILLINAE**Tribe **LEPTANILLINI****LEPTANILLA** Emery

*Leptanilla* Emery, 1870, *Boll. Soc. ent. Ital.* **2** : 196. Type-species: *Leptanilla revelierii* Emery, 1870, loc. cit., by monotypy (nec *Leptanilla* Holmgren, 1908).

Frontal carinae raised so that the condylar bulbs of the antennae are exposed in dorsal view. Antennae 12-segmented. Eyes absent; genae not carinate. Promesonotal suture present, metanotal groove absent. Pedicel of two segments. Pygidium not impressed nor armed with spines or teeth laterally.

Minute ants usually with a total length of less than 1.5 mm. Depigmented, colour yellow.

These very small ants carry out an army ant lifeway in the soil and are probably predacious on the interstitial fauna of the soil. At present known only from Ghana where they were recovered from a Berlese funnel sample taken from a cocoa farm in the eastern region of that country.

Subfamily **PSEUDOMYRMECINAE**Tribe **PSEUDOMYRMECINI****PACHYSIMA** Emery

*Pachysima* Emery, 1912, *Annls Soc. ent. Belg.* **61** : 97 [as a subgenus of *Sima*]. Type-species:

*Tetraponera aethiops* F. Smith, 1877, *Trans. ent. Soc. Lond.* : 71, by original designation.

*Pachysima* Emery; Donisthorpe, 1916, *Entomologist's Rec. J. Var.* **28** : 242. [Raised to genus.]

Mandibles with four or five teeth; palp formula 5.4. Antennae 12-segmented without a differentiated club. Eyes well developed occupying about one third of the length of the side of the head and situated behind the midlength of the head. Three well developed ocelli present. Promesonotum distinct, metanotum present as a sclerite on the dorsum of the alitrunk. Middle and hind legs with one large pectinate and one small simple spur; claws armed with a tooth close to the apex. Petiole and postpetiole each with acute ventral processes.

Black ants, medium to large in size (total length 7 to 14 mm), living usually in plants of the genus *Barteria*, and tending large coccids on the plant.

**TETRAPONERA** F. Smith

*Tetraponera* F. Smith, 1852, *Ann. Mag. nat. Hist.* (2) **9** : 44. Type-species: *Tetraponera atrata*

F. Smith, 1852, loc. cit. [= *Eciton nigrum* Jerdon, 1851, *Madras J. Lit. Soc.* **17** : 111], by designation of Wheeler, 1911.

*Sima* Roger, 1863, *Berl. ent. Z.* **7** : 178. Type-species: *Sima compressa* Roger, 1863, op. cit. : 179 [= *Pseudomyrma?* *allaborans* Walker, 1860], by monotypy.

As *Pachysima* above but slender, more elongate ants with proportionally shorter legs. Clypeus sometimes produced into a spine or armed with a row of teeth or with a crenulate anterior margin. Eyes larger than in *Pachysima*, often occupying one half the length of the side of the head. Ocelli variously developed, often absent but there may be one, two or three present. Either the petiole alone with a ventral process or both segments of the pedicel without ventral processes.

Arboreal species nesting in hollow twigs and branches, their colonies extending deep into the trunk if hollow or rotten. Foragers sometimes descend to ground level where they may be found close to the base of the trunk or on surface roots. The ants are very active with rapid jerky movements and abrupt changes of direction.



**VITICICOLA** Wheeler

*Viticicola* Wheeler, 1920, *Psyche, Camb.* **27** : 53. Type-species: *Sima tessmanni* Stitz, 1910 *Mitt. zool. Mus. Berlin* **5** : 131, by original designation.

Palp formula 3,3 (Wheeler, 1922). Antennae 12-segmented with a 3-segmented club. Eyes small, occupying less than one third of the side of the head and situated at about the midlength of the head. Anterior ocellus present or with all ocelli absent. Claws simple. Otherwise as *Pachysima* above, but decidedly smaller, total length less than 7 mm.

Living only in the hollow stems of the plant *Vitex staudtii* Guerke.

Subfamily **DOLICHODERINAE**Tribe **TAPINOMINI****ENGRAMMA** Forel

*Engramma* Forel, 1905, *Annl. Soc. ent. Belg.* **49** : 180. Type-species: *Engramma lujae* Forel, 1905, op. cit. : 181, by monotypy.

Mandibles with apical and subapical teeth large, followed by a series of denticulae. Anterior border of median portion of clypeus deeply and strongly emarginate. Palp formula 4,3. Eyes well developed, set at or just in front of the midlength of the head and on the dorsal surface. Antennae 12-segmented. Promesonotal and metanotal sutures present on dorsum of alitrunk. Petiole reduced and overhung by the first gastral segment dorsally, invisible in dorsal view. Gaster with five segments visible in dorsal view, anal and associated orifices apical.

Wheeler (1922b : 202) states that most species live in the cavities of myrmecophytes but that one lives in the ground and another inhabits a woven nest mixed with vegetable fibres, attached to the trunks of trees.

**IRIDOMYRMEX** Mayr

*Iridomyrmex* Mayr, 1862, *Verh. zool.-bot. Ges. Wien* **12** : 702. Type-species: *Formica detecta* F. Smith, 1858, *Cat. Hym. Brit. Mus.* **6** : 36 [= *Formica purpurea* F. Smith, 1858], by designation of Bingham, 1903.

*Doleromyrma* Forel, 1907, *Annl. hist.-nat. Mus. natn. hung.* **5** : 28 [as a subgenus of *Tapinoma*]. Type-species: *Tapinoma (Doleromyrma) darwinianum* Forel, 1907, loc. cit., by monotypy.

Mandibles with the two apical teeth enlarged, the remainder of the apical margin with a series of denticulae of varying sizes. Anterior clypeal margin shallowly concave. Palp formula 6,4. Eyes located on the dorsal surface of the anterior half of the head. Antennae 12-segmented. Petiole a small but distinct scale, inclined forwards but not overhung by the first gastral segment.

The single species of this genus represented on the African continent is *I. humilis* (Mayr), an introduction from the neotropical region. To the present time the species has not been successfully introduced to West Africa, although it is well established in Southern Africa.

**TAPINOMA** Förster

*Tapinoma* Förster, 1850, *Hym. Stud.* **1** : 43. Aachen. Type-species: *Tapinoma collina* Förster, 1850 [= *Formica erratica* Latreille, 1798, *Hist. Nat. Form.* : 182], by monotypy.

*Micromyrma* Dufour, 1857, *Annl. Soc. ent. Fr.* **5** : 60. Type-species: *Tapinoma dufouri* Donisthorpe, 1943, *Ann. Mag. nat. Hist.* (11) **10** : 662.

Mandibles with apical two or three teeth large, followed by a row of denticles. Palp formula 6,4. Clypeus with or without median anterior border emarginate. Antennae 12-segmented. Eyes placed at or in front of the midlength of the side of the head on the dorsal surface. Propodeum unarmed or rarely with a pair of blunt tubercles. Petiole reduced or vestigial, overhung by the first gastral segment and not visible in dorsal view. Gaster in dorsal view with four visible tergites; anal and associated orifices ventral.

Nests under bark, in rotten wood, in compressed leaf-litter or in the soil. *T. melanocephalum* (F.) is a common species in houses in West Africa.

### **TECHNOMYRMEX** Mayr

*Technomyrmex* Mayr, 1872, *Ann. Mus. civ. Stor. nat. Giacomo Doria* 2 : 147. Type-species:

*Technomyrmex strenua* Mayr, 1872, loc. cit., by designation of Bingham, 1903.

*Aphantolepis* Wheeler, 1930, *Psyche, Camb.* 37 : 44. Type-species: *Aphantolepis quadricolor* Wheeler, 1930, loc. cit., by original designation.

As *Tapinoma* but with five gastral segments visible in dorsal view, the anal and associated orifices apical.

### Subfamily **FORMICINAE**

#### Tribe **CAMPONOTINI**

### **CAMPONOTUS** Mayr

*Camponotus* Mayr, 1861, *Europ. Formicid.* : 35. Wien. Type-species: *Formica ligniperda*

Latreille, 1802, *Fournis* : 88, by designation of Bingham, 1903.

Polymorphic. Mandibles with five to seven stout teeth. Clypeus often with median portion projecting as a truncated lobe, more obvious in larger workers. Palp formula 6,4. Antennae 12-segmented, without clubs, inserted some distance behind the posterior clypeal margin (a distance usually greater than the basal width of the scape). Frontal carinae converging anteriorly, leaving the antennal insertions only partially or not at all covered. Eyes present, usually well developed, situated behind the midlength of the head. Promesonotal suture distinct, development of other sutures variable. The mesoscutellum is often present on the dorsal surface of the alitrunk in larger workers and in some the metanotum is also present on the dorsum. Alitrunk unarmed, without spines or teeth on pronotum or propodeum, although the latter may be abruptly truncated. Petiole a node or scale, without spines or teeth. Acidopore circular, clearly visible, not concealed by the pygidium.

Common; nests are formed in rotten wood, in the earth, in rotten branches and twigs of standing trees, or directly into living wood by extending the galleries begun by wood-boring beetles. Medium to very large ants (5 to 15 mm) found in all localities. A number of species are arboreal whilst others are purely nocturnal in habits, but the majority are diurnal and terrestrial. All are active, fast-running ants with powerful mandibles.

### **PHASMOMYRMEX** Stitz

*Phasmomyrmex* Stitz, 1910, *Mitt. zool. Mus. Berlin* 5 : 146. Type-species: *Phasmomyrmex*

*sericeus* Stitz, 1910, loc. cit. [= *Camponotus buchneri* Forel, 1886, *Annls Soc. ent. Belg.* 30 : 183], by monotypy.

Monomorphic. Mandibles with five teeth. Clypeus with median portion broadly and shallowly excised. Palp formula 6,4. Antennae 12-segmented, without clubs. Insertions of antennae, form of frontal carinae and eyes as in *Camponotus*. Anterodorsal pronotal angles projecting as short teeth or with the sides strongly marginate. Metanotal groove impressed, the propodeum truncated posteriorly, unarmed. Petiole a node extended into a short dorso-lateral tooth on each side. Acidopore circular, not concealed by the pygidium.

Arboreal, nesting and foraging in trees, very rarely descending to ground level.

### **POLYRHACHIS** F. Smith

*Polyrhachis* F. Smith, 1857, *J. Proc. Linn. Soc.* **2** : 58. Type-species: *Formica bihamata* Drury, 1773, *Illust. Nat. Hist.* vol. **2** : 73, by original designation.

*Hoplomyrmus* Gerstaecker, 1858, *Mber. dt. Akad. Wiss. Berl.* : 262. Type-species: *Hoplomyrmus schistacea* Gerstaecker, 1858, loc. cit., by monotypy.

Mandibles usually with five teeth, rarely with four. Median portion of clypeus usually projecting as a lobe, rarely broadly emarginate. Palp formula 6,4. Antennae 12-segmented, not clubbed, inserted some distance behind the posterior clypeal margin (a distance usually greater than the basal width of the scape). Eyes well developed, often strongly protuberant, situated on the posterior half of the head. Anterolateral pronotal angles projecting as teeth or spines. Alitrunk most often marginate laterally; the propodeum usually bispinose or bidentate (very rarely otherwise). Petiole armed with from two to six teeth or spines. Acidopore concealed by the pygidium when not in use.

Arboreal, usually nesting in the wood or in rot holes in the trunk or branches. Some species build nests of silk mixed with vegetable fibres adherent to the undersides of leaves. A few species nest in the earth. Black, agile ants which may have strikingly coloured, dense pubescence (gold or silver) on the alitrunk or gaster.

### Tribe **FORMICINI**

#### **CATAGLYPHIS** Förster

*Cataglyphis* Förster, 1850, *Verh. naturh. Ver. preuss. Rheinl.* **7** : 493. Type-species: *Formica megacola* Förster, 1850, op. cit. : 490. [= *Cataglyphis fairmairei* Förster, 1850, loc. cit.], by monotypy.

Mandibles strongly dentate; palp formula 6,4. Antennae 12-segmented, inserted very close to the posterior clypeal margin (a distance less than the basal width of the scape). Eyes and ocelli present, the eyes situated behind the midlength of the head. Petiole a node. Acidopore borne on a conical projection of the hypopygium and surrounded by a fringe of hair. Legs very long.

Large rust-red ants confined to savannah and semi-desert conditions; occurring on the coastal plains. Crater nests are made directly into the earth. The ants are very active and fast running.

### Tribe **LASIINI**

#### **PARATRECHINA** Motschulsky

*Paratrechina* Motschulsky, 1863, *Bull. Soc. Nat. Moscou* **36** (3) : 13. Type-species: *Paratrechina currens* Motschulsky, 1863, op. cit. : 14 [= *Formica longicornis* Latreille, 1802, *Fourmis* : 113], by designation of Wheeler, 1911.

Mandibles narrow, armed with five or six teeth, weakly or not at all overhung by the clypeus. Anterior clypeal margin entire or weakly emarginate medially. Palp formula 6,4. Antennae 12-segmented, inserted close to the posterior margin of the clypeus. Eyes well developed, set at or in front of the midlength of the head. Ocelli absent. Propodeum unarmed; petiole a reduced scale, inclined forwards and often overhung by the first gastral segment; always unarmed above. Acidopore borne on a conical projection of the hypopygium, surrounded by a fringe of hairs. Dorsal surface of head, alitrunk and gaster with distinctly paired, coarse setae.

Nests usually in soil or compressed leaf-litter, less frequently in rotten wood or twigs.

### **PRENOLEPIS** Mayr

*Prenolepis* Mayr, 1861, *Europ. Formicid.* : 35. Wien. Type-species: *Tapinoma nitens* Mayr, 1852, *Verh. zool.-bot. Ver. Wien* 2 : 144, by designation of Bingham, 1903.

As *Paratrechina* above but the eyes are behind the midlength of the head. The dorsal surfaces of the head, alitrunk and gaster usually have setae but these are never distinctly arranged in pairs and are usually fine.

### **PSEUDOLASIUS** Emery

*Pseudolasius* Emery, 1877, *Ann. Mus. civ. Stor. nat. Giacoma Doria* 24 : 244. Type-species: *Formica familiaris* F. Smith, 1860, *J. Proc. Linn. Soc.* 5 : 68, by designation of Bingham, 1903.

Polymorphic. Mandibles usually with five or six, rarely with seven or eight teeth, set upon an oblique apical border. Palp formula 3,4 in largest workers, 3,3 in smallest. Clypeus well developed, overhanging the mandibles. Antennae 12-segmented, their insertions virtually confluent with the posterior clypeal margin. Major workers with small eyes present, situated at or just in front of the midlength of the head and on the dorsal surface. Minor workers without eyes. Petiole a scale which may be inclined forwards. Acidopore borne on a conical projection of the hypopygium and surrounded by a fringe of hairs.

Depigmented, yellowish coloured ants nesting in or under very rotten wood in or the soil amongst the roots of trees where dead wood is present. The workers actively avoid light but may be found on the surface of the ground during the night. Workers are often found in Berlese funnel samples of leaf-litter or log-mould.

## Tribe MYRMELACHISTINI

### **APHOMOMYRMEX** Emery

*Aphomomyrmex* Emery, 1899, *Annls Soc. ent. Belg.* 43 : 493. Type-species: *Aphomomyrmex afer* Emery, 1899, op. cit. : 494, by designation of Wheeler, 1911.

Polymorphic. Mandibles with three teeth. Antennae 9-segmented, without a differentiated club. Eyes well developed, oval, situated on the dorsal surface of the head at about the midlength. Ocelli present. Pro- and mesonotum in profile strongly convex. Scale of petiole high and narrow, emarginate dorsally.

Arboreal. Small (3.0-3.5 mm) black ants with the legs and antennae paler, reddish. Sides of alitrunk smooth and shining, dorsal surfaces of head, alitrunk and gaster finely punctate.

Tribe **OECOPHYLLINI**  
**OECOPHYLLA** F. Smith

*Oecophylla* F. Smith, 1860, *J. Proc. Linn. Soc.* 5 : 101. Type-species: *Formica smaragdina* Fabricius, 1775, *Syst. Ent.* : 828, by monotypy.

Dimorphic. Mandibles elongate triangular, apical teeth long, acute and crossing over at rest. Apical margin behind the first tooth with seven to ten smaller teeth or denticles, of which the first and third are usually the largest. (This may not be true of minor workers.) Palp formula 5,4. Clypeus large, convex. its anterior margin overhanging the basal borders of the mandibles. Antennae 12-segmented, the first funicular segment longer than the second and third together. Eyes well developed, ocelli absent but shallow pits may mark their location in the major workers. Alitrunk strongly constricted in the mesonotal region, the pronotum and propodeum considerably broader than the region separating them. Petiole elongate and narrow in dorsal view, forming a low, rounded node in profile. Gaster with acidopore visible, not hidden by the pygidium.

Arboreal ants, making nests by binding leaves together with larval silk. The major workers are general carnivores and scavengers, the minors are rarely seen away from the nest. The single West African species *O. longinoda* (Latreille) tends large coccids, often building protective silk tents over large aggregations of coccids. The construction of the petiole allows reflexion of the gaster over the alitrunk, a position which the ants take when disturbed.

Tribe **PLAGIOLEPIDINI**  
**ACANTHOLEPIS** Mayr

*Acantholepis* Mayr, 1861, *Europ. Formicid.* : 42. Wien. Type-species: *Hypoclinea frauenfeldi* Mayr, 1855, *Verh. zool.-bot. Ges. Wien* 5 : 378, by monotypy.

Mandibles with apical margin oblique, dentate, overhung by the clypeus. Palp formula 6,4. Antennae 11-segmented. Eyes well developed, ocelli present but may be reduced. Alitrunk constricted in the mesonotal region, the propodeum swollen and bidentate or bituberculate. Petiole a scale with the dorsal margin bispinose, bidentate or emarginate. Acidopore borne on a conical projection of the hypopygium, surrounded by a fringe of hairs.

Medium sized to small ants, usually black in colour but some species brown or yellowish. Nests are made in rotten wood either in standing trees or on the ground, or are built directly into hard-packed earth. The foragers of the larger species often ascend trees to tend aphids or coccids whilst those of other species are found only in the leaf-litter layer.

**ACROPYGA** Roger

*Acropyga* Roger, 1862, *Berl. ent. Z.* 6 : 242. Type-species *Acropyga acutiventris* Roger, 1862, op. cit. : 243, by monotypy.

Mandibles narrowly triangular, with five teeth, not overhung by the clypeus. Palp formula 2,3 (Wheeler, 1922) or 1,3 (Gotwald, 1969). Antennae 11-segmented. Eyes small, situated in front of the midlength of the side of the head; ocelli absent. Alitrunk not constricted in the mesonotal region. Propodeum unarmed; petiole an unarmed scale. Acidopore borne on a conical projection of the hypopygium surrounded by a fringe of hairs.

Small, depigmented, yellowish ants. Hypogaecic, uncommon.

**PLAGIOLEPIS** Mayr

*Plagiolepis* Mayr, 1861, *Europ. Formicid.*: 52. Wien. Type-species: *Formica pygmaea* Latreille, [1798], *Essai . . . Fourmis de la France*: 45. Brive, by monotypy.

Mandibles with five teeth; clypeus large and projecting over the basal borders of the mandibles. Palp formula 6,4. Antennae 11-segmented. Eyes well developed, situated in the middle of the sides of the head; ocelli usually absent but may be present. Alitrunk short, weakly constricted between the pronotum and propodeum. Propodeum unarmed; petiole a reduced scale, inclined forwards and may be overhung by the first gastral segment, but never armed or emarginate. Acidopore borne on a conical projection, surrounded by a fringe of hairs.

Medium to small ants, monomorphic or polymorphic. Nests are made under the bark of trees, in rotten wood or twigs, or in hard-packed earth.

Tribe **SANTSCHIellini****SANTSCHIella** Forel

*Santschiella* Forel, 1916, *Revue Suisse Zool.* **24**: 434. Type-species: *Santschiella kohli* Forel, 1916, op. cit.: 435, by monotypy.

Mandibles with seven or eight teeth. Antennae 12-segmented. Eyes very large, occupying almost the whole of the side of the head; ocelli present. Head bordered posteroventrally by a transparent ridge which ends abruptly and is followed by a tooth. Propodeum bispinose. Node of petiole truncated posteriorly, armed posterodorsally by an obtuse tooth on each side.

Rare, believed to be arboreal.

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